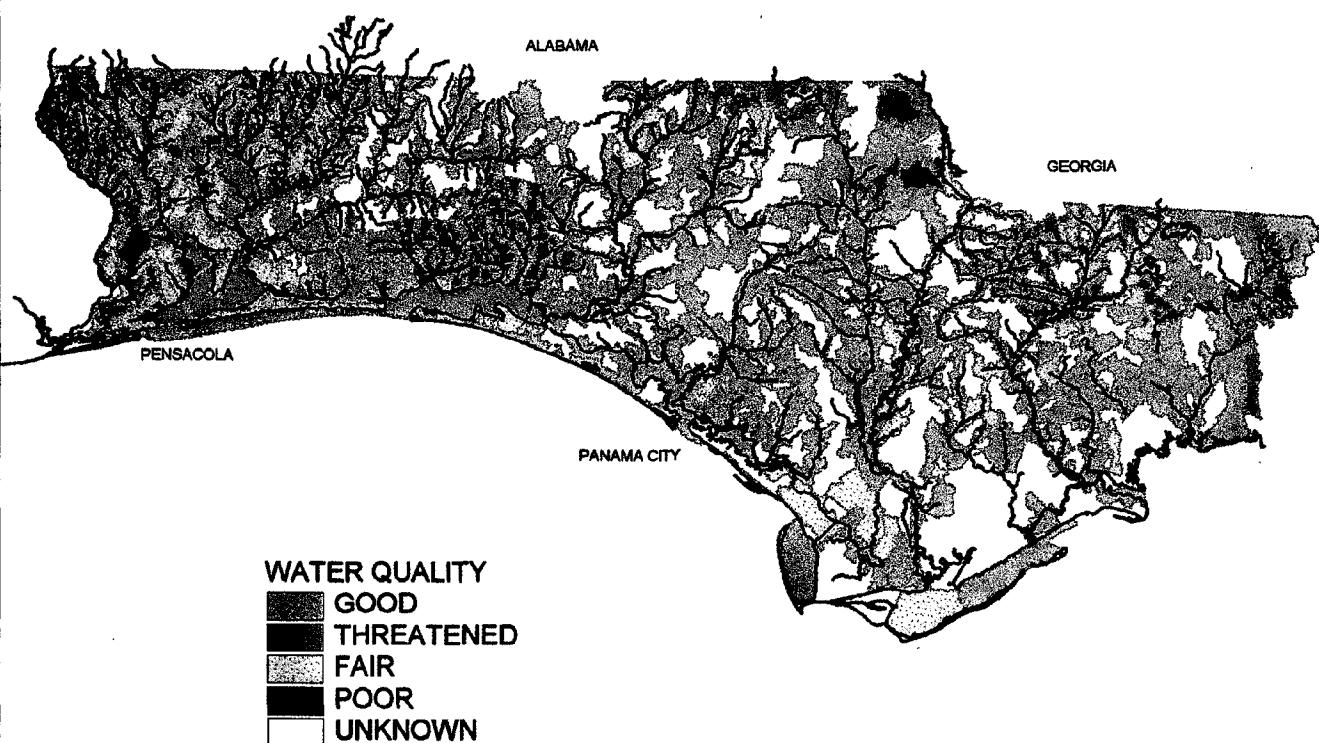


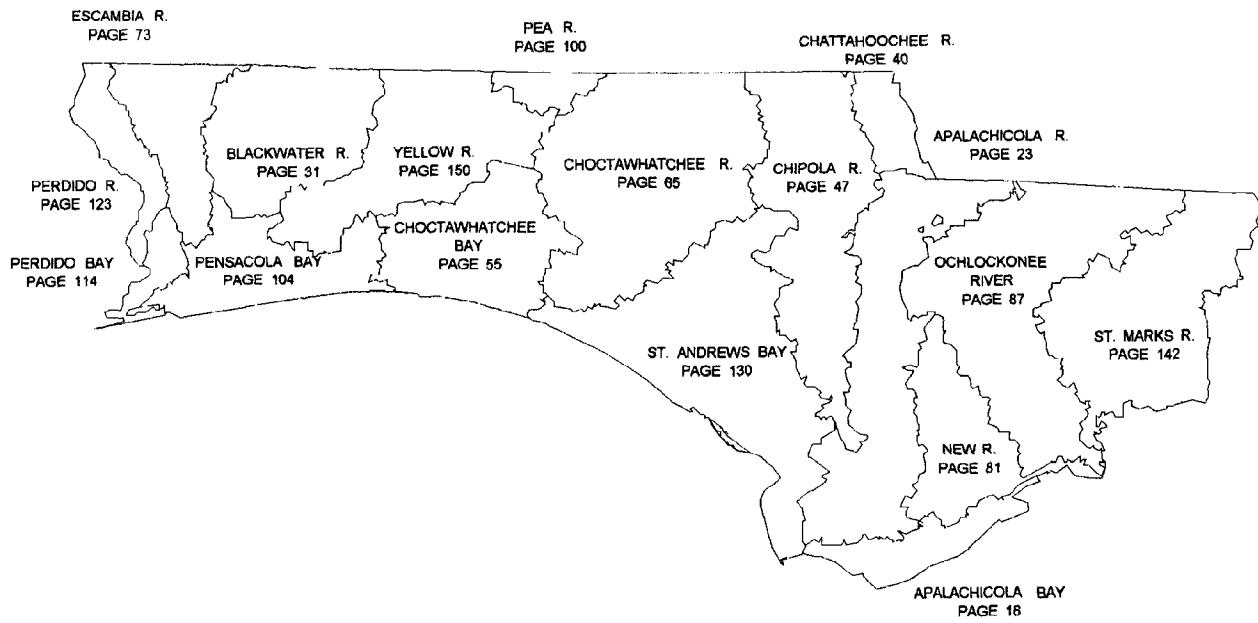
NORTHWEST FLORIDA DISTRICT WATER QUALITY ASSESSMENT 1994 305 (b) TECHNICAL APPENDIX



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TASK 4.1

INDEX TO RIVER BASINS



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**1994 WATER QUALITY ASSESSMENT
FOR THE
STATE OF FLORIDA**

TECHNICAL APPENDIX

**Submitted in accordance with the
Federal Clean Water Act
Section 305(b)**

November, 1994

**Standards and Monitoring Section
Bureau of Surface Water Management
Division Of Water Facilities**

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PREFACE

This report is produced to inform Floridians and the EPA about surface water quality conditions and trends in Florida. Originally produced in 1978, this report has been updated every two years since, and has gone through many changes. The items listed below identify the major format changes which distinguish this report from its predecessor.

- **Regional Reports** - The large size of the statewide report (550 pages) necessitated its subdivision into 5 regional reports which correspond roughly with Department of Environmental Protection District Office boundaries (South and Southeast District Office reports are under one cover).
- **Watersheds versus Reaches** - In 1992 the State's rivers, lakes and estuaries were subdivided into 1600 'reaches' and the assessment was based on this reach structure, however much of the State's waters were not contained within the reaches. For 1994, the assessed area has been enlarged to cover the entire State by dividing the State into 4400 watersheds. The original 1600 reaches remain pretty much intact within the new watersheds, and the terminology now includes watershed and waterbody rather than reach.
- **ARC/INFO Water Quality Color Maps** - GIS techniques were used to produce color maps depicting water quality (designated use support) in each river basin. Watersheds were color coded based on good, threatened, fair or poor water quality designations.
- **New Nonpoint Source Qualitative Survey** - A nonpoint source qualitative survey was performed in 1988 and has been updated and included in this report for 1994. The survey used the same watersheds which were used to assess the water quality data and the qualitative results were integrated into this report to both supplement the quantitative information and to provide information when no quantitative information was available.
- **Current versus Historic Data** - Water quality data were examined for two time periods: current data from 1989-1993 and historic data from 1970-1988. Historic data were used to assess waterbodies only when there was no current data available.

ACKNOWLEDGMENTS

We would like to express our gratitude to all of the professionals that supplied us with water quality data and reports, responded to surveys, and answered telephone inquiries concerning the status of waterbodies in their area. The quality of this report has been greatly enhanced by their efforts.

Many individuals in the District Offices reviewed the report on their sections of the State. These individuals include Rick Bradburn, Glenn Butts, Donald Ray, and Tone Touart-Rohlike in the Northwest District; Cathy Krestalude, Ernie Frey, Lee Banks, Angela Halfacre, and Jim Wright of the Northeast District ; Eric Pluchino and Dave Herbster of the Central District; Paul Wierzbicki, Herb Zebuth, and John Moulton of the Southeast District; Gordon Romeis of the South District, and Pat Fricano of the Southwest District . Sid Flannery of the Southwest Florida Water Management District also reviewed the report for his area.

The Nonpoint Source Stormwater Section put in a tremendous amount of work on the 1994 Nonpoint Source Assessment Survey . This team included Kent Cain, Ellen McCarron, and Mike Scheinkman. Don Foose, recently retired from the USGS , spent four years delineating and digitizing the new watersheds. Bernadette Howe, formerly with the St. Johns River Water Management District, provided much of the foundation work on GIS techniques for handling watersheds and water quality data and mapping the information.

Several of the DEP Tallahassee staff are to be thanked for their support and review of the final document including Don Axelrad, Vivian Garfein, Mark Latch and Richard Harvey, and Machelle Jarmon, who produced numerous draft copies of this text.

List of Abbreviations

AWT	advanced wastewater treatment
BAS	DEP basin water quality study
BMPs	best management practices
BOD	biochemical oxygen demand
cfs	cubic feet per second
DEP	Department of Environmental Protection
DO	dissolved oxygen
EAA	Everglades Agricultural Area
EPA	Environmental Protection Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
MGD	millions of gallons per day
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NWFWMD	Northwest Florida Water Management District
OFW	Outstanding Florida Waters
REACH	an EPA-designated waterbody or portion of a waterbody
SFWMD	South Florida Water Management District
SJRWMD	St. Johns River Water Management District
SRWMD	Suwannee River Water Management District
STORET	EPA's water quality data STOrage and RETrieval system
SWFWMD	Southwest Florida Water Management District
SWIM	Surface Water Improvement and Management
TKN	total Kjeldahl nitrogen (organic nitrogen and ammonia)
TSI	trophic state index
WLA	wasteload allocation
WMD	Water Management District
WQI	water quality index
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY/OVERVIEW

The 305(b) Technical Report provides useful surface water quality related information in a format that is helpful to managers, planners, permit staff, and laymen, as well as water quality experts. For each of the 52 basins, a narrative summary, a map, and data tables identify the quality and trends of Florida's waterbodies, the causes of water quality problems, and the present regulatory activities conducted by DEP and EPA to improve the problem areas. It is the most widely circulated water quality assessment in the State, and also serves as the support document for the Surface Water Section of the 1994 305(b) Water Quality Assessment Main Report submitted to EPA.

The assessment required analysis of the available STORET water quality data for the 1970-1993 time period (STORET is EPA's computerized water quality database). Data from approximately 4,000 stations are assessed in this report, necessitating the extensive use of computerized assessment techniques. Water quality assessment techniques used to identify problem areas included: water quality indices, screening level exceedances, statistical trend analysis, information from special studies, and interviewing local experts. The 305(b) assessment also includes information from the 1994 DEP Nonpoint Source Assessment Survey (which is based on the responses of 50 Florida agencies).

Statewide Results From the Main Report

In the 1992 305(b) assessment report, Florida was subdivided into 1600 reaches which were based on EPA's RF2 (river reach file #2). A reach was defined as a 5 mile long section of river, or 5 square mile section of lake or estuary. Only major waterbodies were assessed in the 1992 report due to the resolution limitations imposed by the RF2 file. For 1994, Florida has been subdivided into 4400 watersheds based on EPA's RF3 and USGS watershed delineations. Many more miles of Florida waterbodies were assessed (50% more river miles, 30% more lake miles, and 20% more estuary miles) due to the increased number of watersheds available for assessment and due to efforts to collect more ambient data and store the data into STORET. Table 1 and Figure 1 show the mileages of Florida waters which were assessed in this year's report. A striking feature shown in Figure 1 is that 77% of river miles have unknown quality. This large percentage is due to the fact that EPA classified Florida's many ditches and canals as rivers, which were not assessed in this report.

A quantitative summary of the State's water quality was accomplished by determining the degree of designated use support for the different waterbody types. The vast majority of assessed Florida waterbodies meet or partially meet their designated use (92% of the river miles, 81% of the lake miles, and 96% of the estuary miles). Figure 2 shows that the river and estuary results are fairly similar, however the lake results show generally worse overall quality than the rivers and estuaries with fewer miles in the "meets use" category and more miles in the "does not meet use" category. Interestingly enough, this year's lake assessment brought in many more small lakes with good overall quality, however, Florida's largest lakes (Lake Okeechobee and Lake George) still overwhelm the State average with their large mileages of fair to poor quality.

It is very important to address both the sources of pollution and trends in water quality. In the past, the majority of identified water quality problems in the State were caused by point sources, including both domestic and industrial sources. Recently, however, nonpoint sources accounted for the majority of Florida's water quality problems. This is due to the fact that point source treatment processes have improved while there has been an increase in acreage of agricultural and urban developed land and their associated runoff.

Water quality trend analysis was performed on waterbodies which had sufficient data for analysis (467 out of 4400 waterbodies). The majority (70%) of these waterbodies (as seen in Figure 3) exhibited no significant trends. Five times as many waterbodies (24%) have improving water quality trends as have degrading trends. The improved water quality trends were generally the result of wastewater treatment plant upgrades or the additions of new regional WWTPs and nonpoint source controls in Tampa, Orlando and several other cities (as seen in Figure 4). Five percent of the waterbodies assessed for trends showed degrading trends; however, there are no regional patterns for degrading trends similar to the improving trends. The causes of degrading trends included point sources and nonpoint sources. Statewide trend detection is limited for the following reasons:

1. Only one-tenth of the waterbodies are assessed for trends.
2. The primary focus of our monitoring network is not trend assessment; most of our stations are frequently moved, and there are very few sites with long-term, monthly data.
3. Our trend assessment technique is tailored to the problem identified in #2, thus, it only identified relatively drastic changes in water quality. Subtle water quality changes due to population growth or nonpoint source treatment improvements are not picked up by this analysis.

Table 1. Mileages of Florida Waters Assessed

	Monitored 1.	Evaluated 2.	Unknown 3.	Total
River (miles)	7,025	4,855	39,978 2.	51,858
Lake (sq. miles)	1,541	400	124	2,064
Estuary (sq. miles)	2,417	1,290	347	4,054

1. Monitored data includes 1989-1993 STORET data.

2. Qualitative information or older STORET data (1970-1988)

3. This number includes 25,909 miles of ditches and canals which have not been assessed.

Table 2. Overall Designated Use Support Summary

RIVERS		(All size units in Miles)		
Degree of use support		<u>Evaluated</u>	<u>Monitored</u>	<u>Total</u>
Fully Supporting		1116	4378	5495
Supporting but Threatened		2259	0	2259
Partially Supporting		1139	2093	3232
Not Supporting		342	554	895
Total Size Assessed		4856	7025	11881

LAKES		(All size units in Square Miles)		
Degree of use support		<u>Evaluated</u>	<u>Monitored</u>	<u>Total</u>
Fully Supporting		213	494	707
Supporting but Threatened		100	0	100
Partially Supporting		53	714	766
Not Supporting		34	332	366
Total Size Assessed		400	1541	1940

ESTUARIES		(All size units in Square Miles)		
Degree of use support		<u>Evaluated</u>	<u>Monitored</u>	<u>Total</u>
Fully Supporting		501	1427	1928
Supporting but Threatened		402	0	402
Partially Supporting		358	851	1209
Not Supporting		28	139	167
Total Size Assessed		1290	2417	3707

Evaluated means qualitative information or older STORET data (1970-1988).
 Monitored means recent STORET data (1989-1993).

FIGURE 1. MILES MONITORED, EVALUATED AND UNKNOWN

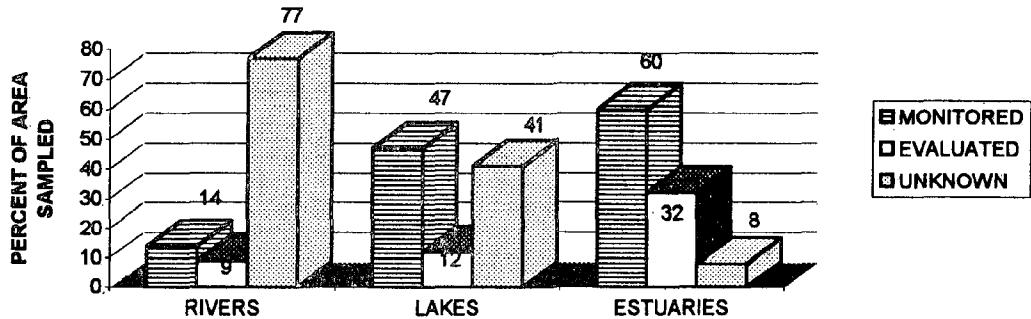


FIGURE 2. DESIGNATED USE SUPPORT IN FLORIDA WATERBODIES

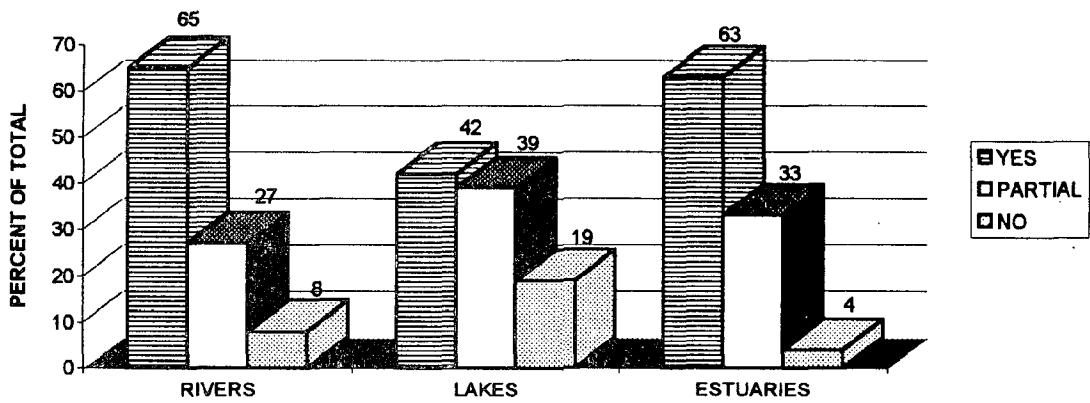
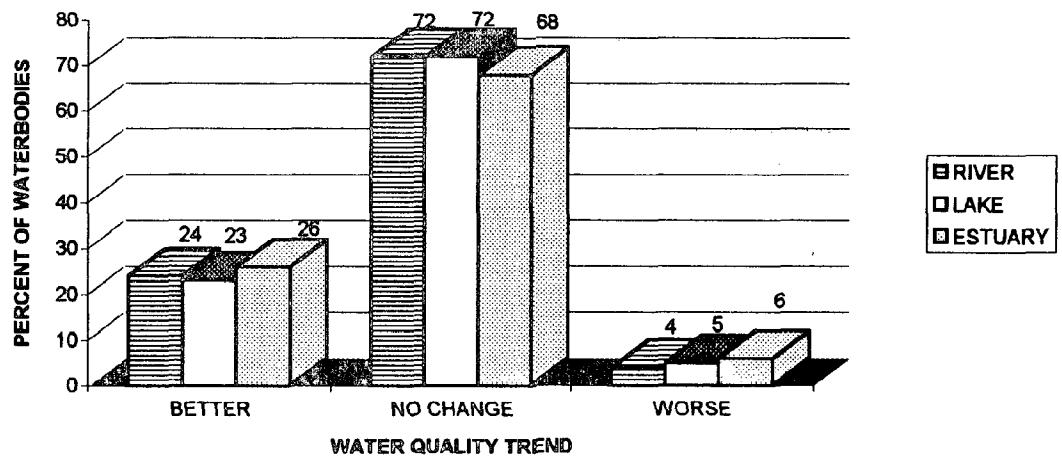


FIGURE 3. TEN YEAR WATER QUALITY TREND ANALYSIS FOR FLORIDA WATERBODIES (1984-1993)



10 year water quality trend

- Better**
- No change**
- Worse**

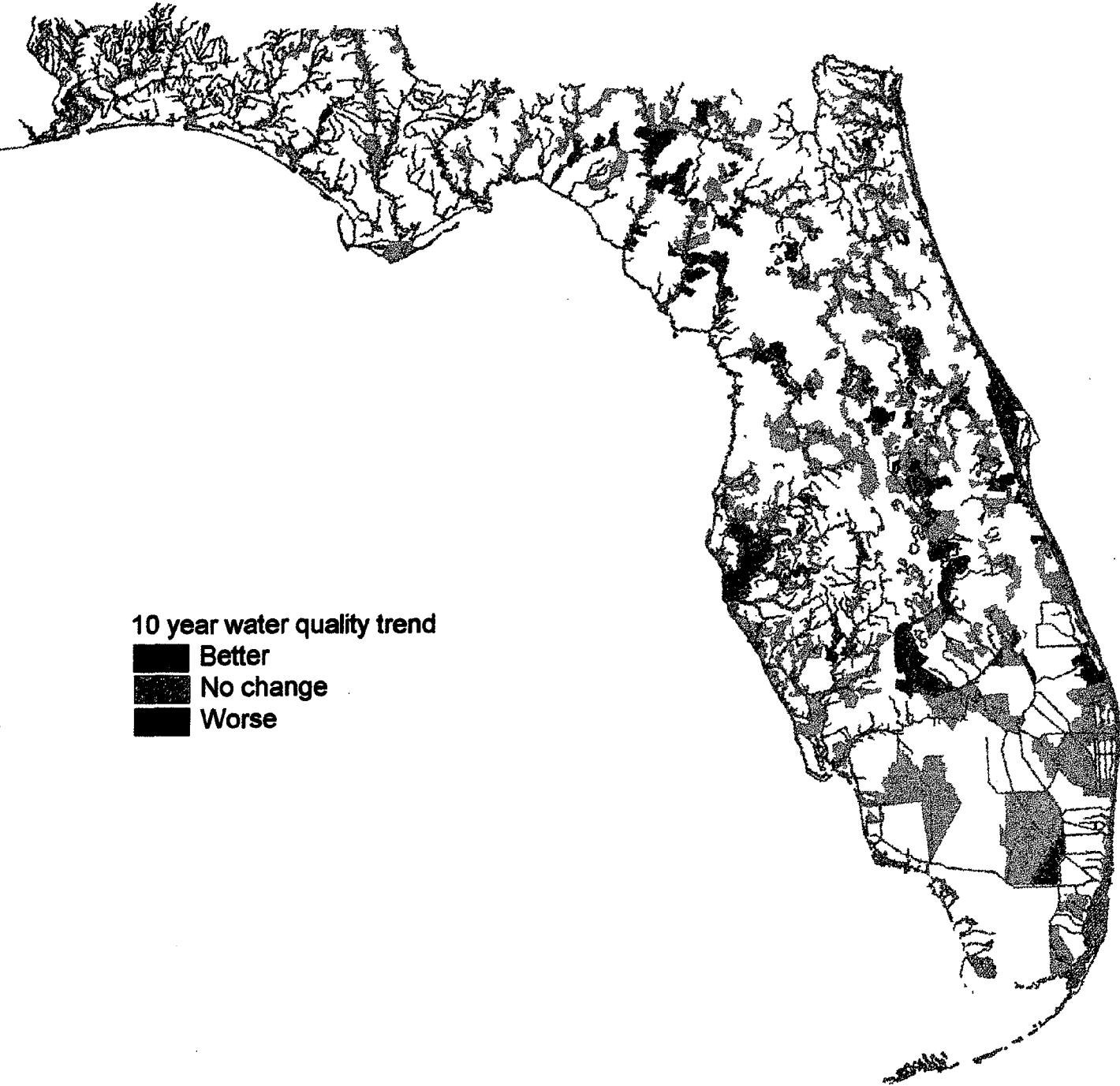


Figure 7. Locations of Water Quality Trends in Florida Waters (1984-1993).

Florida's surface water quality is displayed on the map on the cover of the main report. Two important conclusions can be drawn from this figure: first, the majority of Florida's surface water has good quality; and second, the majority of problems are found in Central and South Florida.

The sparsely populated northwest and west-central sections of the State have relatively better water quality than other areas. Water quality problem areas in the State are evident around the densely populated, major urban areas including: Jacksonville, Orlando, Tampa, Pensacola, the Cape Kennedy area and the southeastern Florida coast. Other areas of poor water quality, not associated with population, are found in basins with intense agricultural usage.

Pollution sources and problems in Florida are varied. The State does not have extensive industrialization, but rather localized concentrations of heavy industry centered mostly in urban areas. Many of the problems found in surface waters in urban areas can be attributed to industrial discharges. Silviculture, agriculture and various types of animal husbandry are a large part of Florida's current and historical economy. Furthermore, Florida has undergone rapid population growth over the past two decades and this continues. This has resulted in more pollution sources associated with residential development.

Florida's major surface water quality problems can be summarized into five general categories :

1. Urban Stormwater. Stormwater carries a wide variety of pollutants from nutrients to toxicants. Siltation and turbidity associated with construction activities can also be a major problem. Problem areas are concentrated around urban centers and mirror, quite well, the population map of the State. Current stormwater rules and growth management laws address this problem for new sources, but are difficult to monitor and enforce.

2. Agricultural Runoff. The major pollutants involved include nutrients, turbidity, BOD, bacteria and herbicides/pesticides. These pollutants generally do their worst damage in lakes and slow moving rivers and canals, and sometimes, the receiving estuary. Problems are concentrated in the central and southern portions of the State, and in several of the rivers entering the State from the north. Traditionally, agricultural operations have had far more lenient regulation than point sources; however, there is increasing recognition of the need for improved treatment of runoff water.

3. Domestic Wastewater. This is an area that has shown significant improvement in the last decade. Most of the waterbodies with improving water quality trends can be traced to wastewater treatment plant (WWTP) upgrades. Further advancements are being encouraged with design innovations such as wastewater discharge to wetlands, water reuse and advanced treatment. Still, a problem exists in the rural areas of the State where financial and technological resources are limited. Consequently, several of these poorly operating facilities are polluting some of Florida's relatively pristine natural waterbodies. Also, septic tank leachate contributes to the degradation of many of Florida's waterbodies.

4. Industrial Wastewater. Most notable among these are the pulp and paper mills. Because of the volume and nature of their discharge, all of the pulp and paper mills operating in the State seriously degrade their receiving waters. The phosphate and fertilizer industries are

major pollution sources (both point and nonpoint) in several of Florida's surface water basins. In addition, the mining of phosphate causes surface water hydrological modifications and major land use disturbances.

5. Hydrological Modifications. This can take the form of damming running waters, channelizing slow moving waters, or dredging, draining and filling wetlands. Such modifications are not strictly pollution sources. However, in most cases where the natural hydrological regime was modified (mostly for water quantity purposes) water quality problems have ensued. Rating the effect of hydrologic modification is difficult. Dredge and fill activities result in a loss of habitat. Disruption of wetlands with a resultant net loss of area reduces the buffering and filtering capacities and biological potential of wetlands. This is a particularly important problem in estuaries. The loss of seagrasses and other marine habitats can seriously affect the maintenance of a viable fishery.

The assessment of public health and aquatic life impacts uncovered several areas of concern. Many of these problems are associated with estuaries and are of a persistent nature. Fish with Ulcerative Disease Syndrome are still present in the lower St. Johns River. This problem was first identified in the early to mid-80s. Second, major fish kills (as many as 1 million fish) occurred in the Pensacola Bay system over the past two years. The more massive of these kills occurred in Bayou Chico. Bacterial contamination in the water and contaminated sediments of the Miami River threaten Biscayne Bay. Many urban estuaries throughout the State have elevated levels of metals and organic contaminants in their sediments. Examples are Tampa Bay, St. Johns River Estuary and Pensacola Bay. The continued loss of fishery habitat from dredge and fill and construction activities is a threat to the maintenance of a viable fishery. The extensive die off of mangroves and seagrasses and algal blooms in Florida Bay are an important State concern. The probable cause is the extensive channelization and hydrological modification of the bay's watershed exacerbated in recent years by a lack of flushing from hurricanes, high water temperature and high salinity.

On the positive side, seagrasses have increased in area in Tampa Bay and there has been an improvement in water quality in Hillsborough Bay.

Three other problems exist which are also of a persistent nature, but largely impact fresh water systems. First, fish consumption advisories for largemouth bass continue to be issued because of elevated mercury concentrations in their tissue. Second, a no fish consumption advisory has been issued for the Fen holloway River. Elevated levels of dioxin were found in fish from this stream. This waterbody receives effluent from a pulp mill. The third problem is the coliform bacteria contamination of the Miami River. Sources of this contamination are illegal sewer connections to the stormwater pipe system, leaking or broken sewer lines, and direct discharges of raw sewage when pump stations have exceeded their capacity. During acute contamination events (direct discharge of sewage) coliform bacteria counts in the Miami River and adjoining waters of Biscayne Bay are hundreds of times higher than State criteria. Efforts are being made by the City of Miami and Dade County to correct these problems.

Northwest Region Basin-by-Basin Evaluation of Water Quality

The quality of Florida waters is graphically depicted on basin maps which follow each basin description. Areas of good, fair, and poor quality are readily discernible on these maps. The following is a summary of the status of the quality of waters in northwest Florida:

In general, rivers in this region have good water quality, with a number of near pristine waterbodies. The major pollution sources in the area include agricultural, silvicultural, and construction runoff. Additionally, several, low volume WWTPs, especially in rural areas, are overloaded and/or poorly operating. Rapid coastal development threatens bays and lagoon waters. Finally, some high volume point source discharges, particularly from pulp and paper mills, adversely affect water quality.

The Perdido Bay basin has water quality problems in two major areas: Elevenmile Creek and Bayou Marcus Creek. Champion Paper Company discharges into Elevenmile Creek. Dioxin contamination is a concern as fish taken from the creek have had tissue levels of dioxin ranging from 8.1 to 25.7 parts-per-trillion. The EPA recommended maximum level is 7 parts-per-trillion. Bayou Marcus Creek receives urban runoff and discharge from a waste treatment facility. The bay is threatened and partially degraded due to these point and nonpoint pollution sources. Perdido River has good water quality except for the area near its mouth that is affected by poorer quality bay waters.

The Escambia, Blackwater, and Yellow Rivers all drain into Pensacola Bay. They generally have good water quality except for localized areas downstream of point sources. In the Escambia River, these areas are in the northernmost reaches, with mostly domestic dischargers, and in the southernmost reaches where there are industrial dischargers. Trammel Creek in the Yellow River basin shows degraded conditions due to domestic discharge. That WWTP has a history of discharge violations. One of the more recent resulted in a large fish kill. The WWTP discharge (from the City of Crestview) has been removed from Trammel creek and routed to an upland site. Though the general water quality of Escambia, Blackwater, Yellow, and Perdido Rivers appears to be good, all four rivers have a mercury problem. High enough concentrations of mercury were found in tissue of largemouth bass to warrant issuing limited consumption advisories. The Pensacola Bay basin has water quality problems associated with urbanization around the City of Pensacola. The western bay receives the bulk of the treated wastewater and urban runoff, while Escambia Bay has industrial discharges. Fish kills have been a persistent problem in both Pensacola and Escambia Bays and their tributary bayous. Although the Choctawhatchee River generally has good water quality, it has a moderate degree of impact from agricultural runoff (turbidity, nutrients, pesticides, etc.). Additionally, several of the tributary systems within the basin have problems associated with domestic or industrial discharge. Alligator, Holmes, and Camp Branch Creeks receive discharge from Chipley, Graceville, and Bonifay WWTPs,

respectively. West Sandy Creek and Bruce Creek, in the western basin, receive discharge from DeFuniak Springs WWTP and the Showell Farm poultry processing plant, respectively. Most of these small treatment plants have recently been upgraded or are in the process of being upgraded through Consent Orders. Choctawhatchee Bay has good water quality, but is threatened by development of its watershed. Of particular concern are spray field and/or urban runoff from developed areas at Ft. Walton Beach and Destin.

St. Andrews Bay has fairly good water quality except for an area around a paper mill discharge. Most of the rest of the basin has good water quality except Beatty Bayou. High concentrations of lead, mercury, DDT, chlordane, PCB's, and polycyclic aromatic hydrocarbons have been found in sediments in Watson Bayou. Also, Deer Point Lake, the drinking water source for Panama City, has nutrient and aquatic weed problems. Both Econfina Creek and Deer Point Lake have largemouth bass contaminated with mercury resulting in fish limited consumption advisories. St. Josephs Bay has excellent water quality except for an area around its paper mill discharge.

The Chipola River has generally good water quality. Localized threats to the river include high nitrates, BOD, and siltation from agricultural and silviculture nonpoint sources. A Basin Assessment found that the river is severely phosphorus limited due to high levels of nitrogen. A tributary to Chipola River and Dry Creek is a Superfund site because of contamination from a battery reclaiming industry and is currently undergoing a cleanup.

The Apalachicola River basin has a mix of good and problem water quality areas. Scipio Creek, at the mouth of the river, is impaired by shrimping and marina activities and historic wastewater loading. The WWTP which formerly discharged to Scipio Creek has been converted to wetlands discharge. The City of Blountstown WWTP discharges to Sutton Creek. That plant has had past problems and is presently under a Consent Order. Apalachicola Bay has very good water quality and supports Florida's largest commercial oyster fishery. Though within this basin there are localized problems due to nonpoint source pollution from fish houses and marinas. The New River basin which drains into the eastern end of Apalachicola Bay has very good water quality. Little of this basin's area has been developed. At the eastern end of Apalachicola Bay is St. George Sound. In general the Sound has good water quality with exception of the area near Carrabelle. The City previously discharged primary treated wastewater, but has recently made significant upgrades in its treatment.

The upper Ochlockonee River has turbidity and nutrient problems primarily from agricultural runoff and out-of-state point sources. Siltation has resulted in a depressed macroinvertebrate community, and as a consequence, a fishery decline. The lower river, Lake Talquin and the Sopchoppy River maintain good water quality. Fish consumption advisories that recommend limited consumption have been issued for both Lake Talquin and the Ochlockonee River and may soon be issued for the Sopchoppy River. Telogia Creek, a tributary to the Ochlockonee, has nutrient and DO problems in its upper reaches as a result of runoff from the Gretna WWTP spray fields. Court action has been taken against the City of Gretna to remove all discharges from Telogia Creek.

The St. Marks, Wakulla, and Aucilla Rivers have excellent water quality except for a small stretch in the lower St. Marks that has oil polluted sediments from oil spills, historic Seminole Asphalt discharge and marina activities. Munson Slough and Lake Munson in Tallahassee have pollution problems from past domestic discharges (now routed to spray irrigation) and current stormwater runoff. Lake Munson has shown marked improvement in water quality since the diversion of the WWTP discharge.

INTRODUCTION AND METHODS

This section describes the water quality assessment procedures used by the Bureau of Surface Water Management to prepare the 1994 Florida Water Quality Inventory [305(b)]. The procedures are:

1. Divide State into Assessment Watersheds.
2. Inventory STORET data.
3. Calculate Stream Water Quality Index (WQI).
4. Calculate Lake/Estuary Trophic State Index (TSI).
5. Apply Screening Levels.
6. Conduct Trend Analysis.
7. Conduct Toxic Pollutant Assessment.
8. Conduct Nonpoint Source Assessment.

Florida's 52 major river basins were subdivided into 4400 watersheds of approximately five square miles each. The predominate waterbody within each watershed was identified and classified as a lake, stream, or estuary. Each watershed and its waterbody formed an assessment unit and all water quality stations within the watershed were aggregated as if they were from the same site (the stations were screened for unwanted sites, such as, point source discharge sites). A water quality inventory was performed on EPA's STORET database. The inventory included the years 1970 through 1993 and was classified as recent (1989-1993) or historic (1970-1988). Tables of water quality data were prepared for each of Florida's 52 basins. Three procedures were then used to assess the water quality data. A Water Quality Index was calculated to determine the overall quality of Florida streams and rivers. The Water Quality Index summarizes information from six categories including water clarity (turbidity and total suspended solids), dissolved oxygen, oxygen demanding substances (biochemical oxygen demand, chemical oxygen demand, and total organic carbon), nutrients (total nitrogen and total phosphorus), bacteria (total coliform and fecal coliform), and macroinvertebrate diversity index (based on natural substrate samples, artificial substrate samples and Beck's Biotic Index). The water quality of lakes and estuaries is described by the Trophic State Index which is a measure of the potential for algal or aquatic weed growth. The components which make up the Trophic State Index include total nitrogen, total phosphorus, chlorophyll and Secchi depth. Screening levels for 19 water quality parameters were also used to determine the quality of Florida lakes, estuaries and streams.

The water quality indices and screening levels have all been tailored to Florida's water quality by using the actual distribution of Florida data to determine the water quality criteria used by the procedures. Specific information on each of the procedures is described in the following sections.

Watershed as the Assessment Unit

In the 1992 305(b) assessment report, Florida was subdivided into 1600 reaches which were based on EPA's RF2 (river reach file #2). A reach was defined as a 5 mile long section of river, or 5 square mile section of lake or estuary. Only major waterbodies were assessed in the 1992 report due to the resolution limitations imposed by the RF2 file. For 1994, Florida has been subdivided into 4400 watersheds based on EPA's RF3 and USGS watershed delineations. The original 1600 reach delineations have been kept intact, however, many additional watersheds have been added due to the increased resolution of RF3 and the USGS watersheds which cover the entire State. USGS was contracted to develop useable, small watersheds (approximately 5 square miles) using watershed boundaries identified on USGS topographic maps and ARC/INFO GIS techniques. USGS completed 75% of the State, but unfortunately they did not delineate watersheds in south Florida (USGS subregion 0309). Watersheds for South Florida were adapted from a much coarser delineation developed by the South Florida Water Management District. The resulting watersheds in this area are about 50 square miles each, ten times larger than those for the rest of the State.

The major waterbody within each watershed was identified and named. Usually each watershed encompassed one major or one minor named waterbody (similar to the 1992 reach structure). The length of each stream waterbody and the area of lake and estuary waterbodies is essential information. The length of stream waterbodies was determined by GIS measurements of the RF3 trace (or assigned a length of 5 miles if no RF3 trace was available). The area of lake and estuary waterbodies was determined with crude GIS aerial measurement techniques (if estuary waterbodies had no RF3 traces, their area was set to 5 square miles and unknown lake waterbodies were assigned an area of 1 square mile). The water quality within each waterbody is assumed to be homogenous (if data prove this assumption to be wrong, then the waterbody was subdivided). GIS techniques were used to assign STORET sites to their respective watersheds and the location of each site was visually inspected on a GIS map. If more than one named waterbody showed up in a watershed (based on the STORET data within a watershed), then the watershed was subdivided.

Inventory of STORET Data

An inventory of data was retrieved from STORET for the 1970-1993 time period. If data within a watershed were available for the current time period (defined as 1989-1993), then historical data was not examined, except for trend analysis. If no current data were found, then historic data (defined as 1970-1988) were used for the assessment. Fifty STORET parameter codes representing 21 different water quality parameters were inventoried (Table 3). There are about 8000 Florida stations in STORET which were sampled in 1970-1993. These stations are located in 1500 of the 4400 watersheds. Annual average (median) water quality was calculated for each of these stations and the data were stored on a local IBM Personal computer. In order for an annual average to be calculated for a station, the station had to be sampled at least twice within each year. STORET remark

Table 3. Storet Water Quality Assessment Parameters.

Category	Storet Parameter	Name	Storet Parameter Code
Coliform	Fecal Coli	MPN-FCBR/100ml	31616
Coliform	Fecal Coli	MPNECMED/100ml	31615
Coliform	Total Coli	MGIMENDO/100ml	31501
Coliform	Total Coli	MPN CONG/100ml	31505
Conductivity	Conductivity	at 25c micromho	95
Conductivity	Conductivity	Field micromho	94
Dissolved Oxygen	Dissolved Oxygen	% saturation	301
Dissolved Oxygen	Dissolved Oxygen	mg/l	300
Dissolved Oxygen	Dissolved Oxygen	Probe mg/l	299
Diversity Index	Biotic Index	BI	82256
Diversity Index	Diversity Index	Artificial substrate	82251
Diversity Index	Diversity Index	Natural substrate	82246
Flow	Stream Flow	cfs	60
Flow	Stream Flow	inst.-cfs	61
Oxygen Demand	BOD 5 day	mg/l	310
Oxygen Demand	COD Hi Level	mg/l	340
Oxygen Demand	Tot Organic Carbon	C mg/l	680
pH-Alkalinity	pH SU		400
pH-Alkalinity	pH SU	lab	403
pH-Alkalinity	Total Alkalinity	CaCO3 mg/l	410
Temperature	Temperature Water	cent	10
Trophic Status	Chlorophyll A	mg/l	32230
Trophic Status	Chlorophyll A	mg/l	32217
Trophic Status	Chlorophyll A	mg/l	32210
Trophic Status	Chlorophyll A	mg/l corrected	32211
Trophic Status	Chlorophyll Total	mg/l	32234
Trophic Status	Chlorophyll	total ug/l	32216
Trophic Status	Nitrogen ammonia	Diss-NO2 mg/l	71846
Trophic Status	Nitrogen NH3+NH4-	N Diss mg/l	608
Trophic Status	Nitrogen NH3_NH4-	N total mg/l	610
Trophic Status	Nitrogen Nitrate	Diss-NO3 mg/l	71851
Trophic Status	Nitrogen Nitrate	Tot-NO3 mg/l	71850
Trophic Status	Nitrogen NO2&NO3	N-Diss mg/l	631
Trophic Status	Nitrogen NO2&NO3	N-Total mg/l	630
Trophic Status	Nitrogen NO3-N	Diss mg/l	618
Trophic Status	Nitrogen NO3-N	Total mg/l	620
Trophic Status	Nitrogen Org N	N mg/l	605
Trophic Status	Nitrogen Tot Kjel	N mg/l	625
Trophic Status	Nitrogen Total N	As NO3 mg/l	71887
Trophic Status	Nitrogen Total N	N mg/l	600
Trophic Status	Phosphorus	OrthoPO4 mg/l	660
Trophic Status	Phosphorus Total	As PO4 mg/l	71886

Table 3. Storet Water Quality Assessment Parameters (continued).

Category	Storet Parameter	Name	Storet Parameter Code
Trophic Status	Phosphorus Total	mg/l P	665
Trophic Status	Transparency	Secchi Inches	77
Trophic Status	Transparency	Secchi Meters	78
Water Clarity	Color	PT-CO Units	80
Water Clarity	Color-AP	Pt-CO Units	81
Water Clarity	Residue Tot NFLT	mg/l	530
Water Clarity	Turbidity	JKSN JTU	70
Water Clarity	Turbidity	TRBIDMTR HACH FTU	76

codes also present a problem in data analysis when a data value is recorded as "less than" the actual value reported. In these cases the reported value was multiplied by 0.5 to adjust for the "less than" condition. Data with STORET remark codes indicating that the reported value was "greater than" the actual value were dropped from further analysis. A Water Quality Index value was calculated for each stream/river annual median and a Trophic State Index value was calculated for each lake/estuary annual median.

Florida Stream Water Quality Index Procedure

To assess Florida stream water quality, a Florida stream Water Quality Index (WQI) was developed and first used in the 1988 305(b) report. The WQI is based on the quality of water as measured by six water quality categories (water clarity, dissolved oxygen, oxygen demanding substances, bacteria, nutrients and biological diversity). Each category may have more than one parameter as shown in Table 4. Raw (annual average) data are converted into index values which range from 0 to 99 for the six categories. Index values correspond to the percentile distribution of stream water quality data in Florida (Table 4). [The percentile distribution of STORET water quality data were determined in 1987 for 2,000 ambient, stream STORET locations in Florida.] For example, Table 4 shows the BOD concentrations ranged from 0.8 mg/l (10 percentile) to 5.1 mg/l (90 percentile) with a median value of 1.5 mg/l (50 percentile). A BOD concentration of 0 to less than 0.8 mg/l is assigned an index value of 0 to 9, etc.

The overall WQI is the arithmetic average of the six water quality index categories. The index for each category is determined by averaging its component parameter index values. Missing water quality parameters and missing water quality categories are ignored in the final calculation. Therefore, the final WQI is based on an average of anywhere from 1 to 6 water quality index categories. Table 5 shows an example calculation of the WQI. The WQI can be calculated from just one index category; however, it becomes more reliable as more categories are used in its calculation.

In order to determine the range of values of the WQI which correspond to good, fair and poor quality, the WQI was correlated with the EPA National Profiles Water Quality Index for Florida data. (The EPA WQI was used in the 1986 305(b)). Based on this correlation, the cutoff values for the WQI were determined as follows: 0 to less than 45 represents good quality, 45 to less than 60 represents fair quality, and 60 to 99 represents poor quality.

The Florida stream Water Quality Index has several advantages over indices used previously. First, the index is tailored to Florida water quality data, since it is based on the percentile distribution of Florida stream data. Second, it uses the water quality categories which are felt to be the most important measures of water quality in Florida: water clarity, dissolved oxygen, oxygen demanding substances, nutrients, bacteria and biological diversity. Third, it is simple to understand and calculate and does not require a mainframe computer or any complex data transformations or averaging schemes. Finally, the index

Table 4. Florida Stream Water Quality Index Criteria.
Percentile Distribution of STORET Data.

Parameter	Unit	Best Quality				Median Value	Worst Quality		
		10%	20%	30%	40%		50%	60%	70%
** Category: Water Clarity									
Turbidity	JTU	1.50	3.00	4.00	4.50	5.20	8.80	12.20	16.50
Total Suspended Solids	mg/l	2.00	3.00	4.00	5.50	6.50	9.50	12.50	18.00
** Category: Dissolved Oxygen									
Dissolved Oxygen	mg/l	8.00	7.30	6.70	6.30	5.80	5.30	4.80	4.00
** Category: Oxygen Demand									
Biochemical Oxygen Demand	mg/l	0.80	1.00	1.10	1.30	1.50	1.90	2.30	3.30
Chemical Oxygen Demand	mg/l	16.00	24.00	32.00	38.00	46.00	58.00	72.00	102.00
Total Organic Carbon	mg/l	5.00	7.00	9.50	12.00	14.00	17.50	21.00	27.50
** Category: Nutrients									
Total Nitrogen	mg/l as N	0.55	0.75	0.90	1.00	1.20	1.40	1.60	2.00
Total Phosphorus	mg/l as P	0.02	0.03	0.05	0.07	0.09	0.16	0.24	0.46
** Category: Bacteria									
Total Coliform	#/100 ml	100.00	150.00	250.00	425.00	600.00	1100.00	1600.00	3700.00
Fecal Coliform	#/100 ml	10.00	20.00	35.00	55.00	75.00	135.00	190.00	470.00
** Category: Biological Diversity									
Diversity Index Nat. Substrate Index		3.50	3.10	2.80	2.60	2.40	2.15	1.95	1.50
Diversity Index Art. Substrate Index		3.55	3.35	3.20	3.05	2.90	2.65	2.40	1.95
Beck's Biotic Index		32.00	28.00	23.00	18.50	14.00	11.00	8.00	5.50

Table 5. An Example Calculation of the Florida Stream Water Quality Index (WQI).

Water Quality Category ¹	Water Quality Parameter ²	Value ³	Parameter Index Value ⁴	Index Average ⁵
Water Clarity	Turbidity	3.9 mg/l	29	40
	Total Suspended Solids	7.0 mg/l	52	
Dissolved Oxygen	Dissolved Oxygen	5.4 mg/l	58	58
	BOD	2.8 mg/l	75	
	COD	31.0 mg/l	29	
Oxygen Demanding Substances	TOC	--	--	52
	Total Nitrogen	1.87 mg/l	77	
	Total Phosphorus	0.56 mg/l	82	
Nutrients	Total Coliform	1800 MPN/100 ml	71	79
	Fecal Coliform	1900 MPN/100 ml	70	
Bacteria	Natural Substrate	1.7	76	69
	Artificial Substrate	2.3	72	
	Beck's Biotic Index	11.0	60	
<u>WQI = 61⁶</u>				

¹ - These are the 6 water quality categories.

² - These are the 13 water quality parameters which make up the 6 categories.

³ - These are the actual data values ('.') indicates no measurement was taken for this parameter).

⁴ - The index value is based on the percentile distribution values shown in Table 4.

⁵ - The category average is based on an average of each of the water quality parameter values.

⁶ - The WQI is an average of the category index values, i.e., WQI = $(40+58+52+79+70+69)/6=61$.

works; it nicely identifies areas of good, fair, and poor water quality that correspond to professional and public opinion.

A toxic pollutants category would be a valuable addition to the index; however, toxic pollutants were not included in the index since there is relatively little data in Florida (compared to the amount of data for conventional pollutants). Toxic pollutants were assessed separately as discussed later in this section of the report.

Trophic State Index Procedure

The Trophic State Index procedure provides an effective method of classifying lakes based on the lake's chlorophyll, Secchi depth, nitrogen and phosphorus concentrations. The index was developed in 1982 in response to the EPA Clean Lakes Program and is documented in the Classification of Florida Lakes Report by the University of Florida, Department of Environmental Engineering Sciences. This index remains unchanged from the 1988 305(b) report.

The index is based on a trophic classification scheme developed in 1977 by R.E. Carlson. It relies on three trophic indicators to describe the trophic status of a lake. The goal was to have each indicator relate to algal biomass such that a 10 unit change in the index would represent a doubling or halving of algal biomass. Carlson developed indices based on Secchi disc transparency, chlorophyll concentration and total phosphorus concentration. The Florida Trophic State Index (TSI) is based on the same rationale, but also includes total nitrogen concentration as a fourth index. Criteria were developed for Florida lakes from a regression analysis of data on 313 Florida lakes. The desirable upper limit for the index is set at 20 ug/l chlorophyll which corresponds to an index of 60. Doubling the chlorophyll concentration to 40 ug/l results in an index increase to 70 which is the cutoff for undesirable (or poor) lake quality. Index values from 60 to 69 represent 'fair' water quality. The criteria for chlorophyll, Secchi depth, total phosphorus and total nitrogen concentrations are shown in Table 6.

A nutrient index is also calculated based on phosphorus and nitrogen concentrations and the limiting nutrient concept. The limiting nutrient concept identifies a lake as phosphorus limited if the nitrogen to phosphorus concentration ratio is greater than 30, as nitrogen limited if the ratio is less than 10, and balanced (depending on both nitrogen and phosphorus) if the ratio is 10-30. Thus, the nutrient TSI is based solely on phosphorus if the ratio is greater than 30, solely on nitrogen if less than 10, or based on both nitrogen and phosphorus if the ratio is between 10 and 30. An overall index (TSI) is calculated based on the average of the chlorophyll TSI, the Secchi depth TSI and the nutrient TSI. For this index to be calculated, both nitrogen and phosphorus measurements are required for the sample. The lake trophic state index was also applied to Florida estuaries to describe estuarine water quality. The criteria for the estuary quality ratings is 10 less than the lake ratings (i.e., good estuarine water quality is a TSI value of 0-49, fair quality is 50-59, and poor quality is a value of 60-100). Table 7 shows an example TSI calculation.

Table 6. Trophic State Index (TSI) for Lakes and Estuaries.

For Lakes: 0-59 is good, 60-69 is fair, 70-100 is poor
 For Estuaries: 0-49 is good, 50-59 is fair, 60-100 is poor

Trophic State Index TSI	Chlorophyll (ug/l)	Secchi Depth (m)	Total Phosphorus (mgP/l)	Total Nitrogen (mgN/l)
0	0.3	7.4	0.003	0.06
10	0.6	5.3	0.005	0.10
20	1.3	3.8	0.009	0.16
30	2.5	2.7	0.01	0.27
40	5.0	2.0	0.02	0.45
50	10.0	1.4	0.04	0.70
60	20.0	1.0	0.07	1.2
70	40	0.7	0.12	2.0
80	80	0.5	0.20	3.4
90	160	0.4	0.34	5.6
100	320	0.3	0.58	9.3

TSI equations which generate the above criteria:

$$CHLA_{TSI} = 16.8 + [14.4 \times LN (CHLA)] \quad (\text{use Natural Log})$$

$$SD_{TSI} = 60 - [30 \times LN (SD)]$$

$$TN_{TSI} = 56 + [19.8 \times LN (TN)]$$

$$TP_{TSI} = [18.6 \times LN (TP \times 1000)] - 18.4$$

$$TSI = (CHLA_{TSI} + SD_{TSI} + NUTR_{TSI*}) / 3$$

* Limiting Nutrient considerations for Calculating NUTR_{TSI}:

If TN/TP > 30 then NUTR_{TSI} = TP_{TSI}

If TN/TP < 10 then NUTR_{TSI} = TN_{TSI}

If 10 < TN/TP < 30 then NUTR_{TSI} = (TP_{TSI} + TN_{TSI}) / 2

Table 7. An Example Calculation of the Trophic State Index (TSI)
 (See Table 6 for Formulas).

	Annual Average	TSI Calculation	Average TSI
Chlorophyll	6.0 ug/l	42.6 ¹	42.1
Secchi Depth	1.8 meters	42.3 ²	42.3
Phosphorus*	0.04 mg P/l	50.2 ³	
Nitrogen*	0.67 mg N/l	48.1 ⁴	49.2 ⁵
			45.0 ⁶

1. CHLA = $16.8 + [14.4 \times \ln (6.0)] = 42.1$ (use Natural Log)
2. SD = $60 - [30 \times \ln (1.9)] = 42.3$
3. TP = $[18.6 \times \ln (0.04 \times 1000)] - 18.4 = 50.2$
4. TN = $56 + [19.8 \times \ln (0.67)] = 48.1$
5. TN/TP Ratio = $0.67/0.04 = 16.7$ therefore, TSI NUTR = an average of TSI Phosphorus and TSI Nitrogen = $(50.2 + 48.1)/2 = 49.2$
6. $(42.6 + 42.3 + 49.2)/3 = 45$

* Note: If either phosphorus or nitrogen sampling information are missing, then the index is not calculated. Chlorophyll and/or Secchi Depth may be missing and the index will be calculated.

Screening Levels

Screening levels were used to determine water quality problems caused by each of nineteen water quality parameters (Table 8). Screening levels were based on either Florida criteria or on criteria established by professional judgment when quantitative Florida criteria are absent. Different screening levels were developed for streams, lakes and estuaries to take into account the natural differences among these waterbodies. The criteria which were established by professional judgment were based on the percentile distribution of Florida data.

The eightieth percentile was chosen as the cutoff between acceptable and unacceptable water quality. This means that 80% of Florida's water quality data will have acceptable levels. Table 8 identifies the screening levels used, the typical values measured and the Florida criteria for streams, lakes and estuaries. Screening level exceedances are noted in the data tables for each watershed in each basin.

Trend Analysis

Water quality trend analysis was performed on 12 water quality parameters (plus the overall stream water quality index and the trophic state index) for 460 watersheds. The time frame for the analysis is from 1984-1993. The analysis was quite simple; a non-parametric correlation analysis (Spearman's Ranked Correlation) was used to analyze the ten-year trend of the annual STORET station medians for each watershed. There may have been only one station analyzed within a watershed resulting in a maximum of ten years of data, or there may have been many stations sampled within the watershed resulting in the analysis of many more yearly station medians and a more meaningful trend analysis.

A separate trend assessment technique was used to analyze stream, lake, and estuary waterbodies. Stream trend analysis utilized the trend information from eight water quality parameters (bacteria, turbidity, total suspended solids, BOD, dissolved oxygen, Secchi depth, nitrogen and phosphorus) plus the overall water quality index. Lake and estuary trend analysis focused on four trophic state parameters (chlorophyll, Secchi depth, nitrogen and phosphorus) plus the trophic state index.

The overall trend of each waterbody was determined by comparing the number of improved water quality parameters to the number of degraded water quality parameters. Some waterbodies showed quite strong trends. If a waterbody showed no trends, or just one parameter showed a trend (or the number of improved trends minus the number of degraded trends is zero or one), then the trend is classified as "no change". This trend analysis must be considered preliminary due to the simplicity of the technique.

Table 8. Water Quality Assessment Parameters For Florida Streams, Lakes and Estuaries, Screening Levels-Typical Values-Florida Criteria.

Parameter	Units	Screening Level	Typical Values			Florida Criteria (17-302) Class III
			10%	(Median)	90%	
** Water Body Type: Stream						
Alkalinity	CaCO ₃ mg/l		13	(75)	150	20.0 mg/l min.
Beck's Biotic Index	Index #	<5.5	4	(14)	32	
BOD 5 Day	mg/l	>3.3	0.8	(1.5)	5.1	Not cause DO<5 mg/l
Chlorophyll	ug/l		1	(6)	30	
COD	mg/l	>102	16	(46)	146	
Coliform-Fecal	#/100 ml	>470	10	(75)	960	200/100 ml
Coliform-total	#/100 ml	>3700	100	(600)	7600	1000/100 ml
Color	Platinum-Color Units		21	(71)	235	No nuisance conditions
Conductivity	micromho	>1275	100	(335)	1300	1275 or 50% abv background
Dissolved Oxygen	mg/l	<4.0	3.1	(5.8)	8.0	5.0 mg/l
Diversity Artificial Sub	index	<1.95	1.4	(2.9)	3.6	min. 75% of DI
Diversity Natural Substr	index	<1.50	1.2	(2.4)	3.5	min. 75% of DI (marine)
DO % Saturation	%		36	(68)	90	
Fecal Strep	#/100 ml		20	(15)	1700	
Fluoride	mg/l		0.1	(0.2)	0.8	10.0 mg/l
Nitrogen-total	mg/l as N	>2.0	0.5	(1.2)	2.7	Not cause imbalance
pH	standard units		6.1	(7.1)	7.9	<6.0 >8.5
Phosphorus-total	mg/l as P	>0.46	0.02	(0.09)	0.89	Not cause imbalance
Secchi Disc Depth	meters		0.4	(0.8)	1.7	min. 90% background
Temperature	centigrade		19	(23)	28	No nuisance conditions
Total Organic Carbon	mg/l	>27.5	5	(14)	37	
Total Suspended Solids	mg/l	>18.0	2	(7)	26	
Turbidity	JTU FTU	>16.5	1.5	(5)	21	29 NTUs above background
** Waterbody Type: Lake						
Alkalinity	CaCO ₃ mg/l	>20.	2	(28)	116	20.0 mg/l min.
Chlorophyll	ug/l	>40.	1	(12)	70	
Nitrogen-total	mg/l as N	>2.0	0.4	(1.1)	2.5	Not cause imbalance
Phosphorus-total	mg/l as P	>0.12	0.01	(0.05)	0.29	Not cause imbalance
Secchi Disc Depth	meters	<0.7	0.4	(0.9)	2.7	Min. 90% background
** Waterbody Type: Estuary						
Chlorophyll	ug/l	>40	1	(9)	36	
Nitrogen-total	mg/l as N	>2.0	0.3	(0.8)	1.6	Not cause imbalance
Phosphorus-total	mg/l as P	>0.12	0.01	(0.07)	0.20	Not cause imbalance
Secchi Disc Depth	meters	<0.7	0.6	(1.1)	3.0	Min. 90% background

Toxic Pollutant Assessment

The assessment of toxic pollutants in Florida's waters was accomplished by an inventory of 9 STORET toxic metal parameters for 1991-93 (Table 9). The Florida surface water quality standards (Chapter 17-302, Florida Administrative Code) were used to assess whether the toxic pollutant was found at an elevated level. Several standards are based on hardness levels, however, since hardness levels were not available in all cases, a hardness value of 100 mg/l as calcium carbonate was assumed. An elevated level was defined as any exceedance of the standard for any of the nine metals. Generally, each waterbody was sampled two or three times for several of the metals during the last three years.

Nonpoint Source Assessment

An extensive assessment of nonpoint source impacts on Florida's waters was conducted in 1988 through the use of a questionnaire sent to all major State agencies (Water Management Districts, Division of Forestry, Game and Fresh Water Fish Commission), city and county offices, U.S. Soil Conservation Service, U.S. Forestry Service, Regional Planning Councils, local Soil and Water Conservation Districts, citizen environmental groups (Sierra Clubs, Audubon Society and others) and professional outdoor guides. The respondents (approximately 150 agencies and 350-400 participants) to the questionnaire identified nonpoint sources of pollution, environmental pollution symptoms (fish kills, algal blooms, etc.) pollutants and miscellaneous comments. The assessment has been updated in 1994. The 1994 nonpoint source assessment was performed more efficiently than the 1988 version due largely to the use of GIS technology for compiling and displaying the data, and also advancements in the questionnaire methodology. Scannable forms were used eliminating the need to key punch data and integration with the 305b report was much improved.

Florida's 1994 nonpoint source assessment was performed using a qualitative, best professional judgment approach. Unlike point source pollution analysis and its readily available STORET ambient data, there is rarely any convenient database of water quality monitoring data that has been designed for analyzing impacts of nonpoint source pollution on surface waters. Therefore, the assessment procedure was designed to make use of the knowledge of experienced field personnel who had information about individual waterbodies. The 1994 survey was sent to essentially the same group of professionals as the 1988 report and approximately fifty respondents identified nonpoint sources of pollution, environmental symptoms of pollution (fish kills, algal blooms, etc.), degree of impairment (rating) of a waterbody and miscellaneous comments. A total of 1720 watersheds or about 40 % of the total watersheds were qualitatively assessed by the respondents. Data tables summarizing the 1994 NPS survey are presented for each basin in this report. The remainder of this section describes the information presented in these tables.

Table 9. Toxic Metals in the Water Column.

Metal	Storet Parameter Number	Number of Waterbodies Sampled	Florida Criteria (ppb)	% of Waterbodies With Exceedances
Arsenic	1002	162	50	0%
Cadmium	1027	211	1.1	17%
Chromium	1034	155	207*	0%
Copper	1042	330	12*	10%
Iron	1045	378	1000	22%
Lead	1051	240	3.2*	30%
Mercury	71900	129	0.012	47%
Nickel	1067	130	158*	0%
Zinc	1092	253	106	10%

* actual criteria is dependent on water hardness which was assumed to be 100 mg/l as calcium carbonate since hardness was not available in all waterbodies

The impairment rating of a waterbody was defined as status of waters within a watershed as determined by support or nonsupport of designated use. The status of a watershed was dependent on making a determination of designated use support that applied to all surface waters within the aerial extent of that watershed. Designated use refers to the classification or standards and criteria applied to all Florida waters.

Impairment rating categories used were as follows:

1. Good (meets designated use). All surface waters in the watershed are supporting their use classification with no evidence of nonpoint source problems.
2. Threatened (meets designated use). All surface waters in the watershed are attaining their use classification, but in the absence of any future management activities, it is suspected that within five years at least some of the surface waters in the watershed will not support their designated use.
3. Fair (partially meets designated use). Some, but not all, surface waters in the watershed are not supporting their designated use.
4. Poor (does not meet use). All surface waters in the watershed are not supporting their designated use.

Nonpoint source pollution is generally associated with land use activities which do not have a well-defined point of discharge, such as discharge from a pipe or smoke stack. Nonpoint contaminants are carried to waterbodies by direct runoff or percolation through the soil to groundwater. There are many different potential source areas. Some of the common activities and sources which were considered in the nonpoint source assessment include:

1. Construction site runoff. This type of source can provide sediment, chemicals and debris to surface waters.
2. Urban stormwater. Runoff from buildings, streets and parking lots carries with it oil, grease, metals, fertilizers and other pollutants.
3. Land disposal. Leachate from septic tanks and landfills may pollute groundwater or local surface waters. Contamination of surface waters can be by either by direct runoff or discharge from groundwater.
4. Agricultural runoff. Runoff from fields and pastures carries with it sediments, pesticides and animal wastes (which can be a source of bacteria and viruses and nutrients).
5. Silviculture operations. Logging activities which erode forest soils add turbidity and suspended solids to local surface waters.
6. Mining. This type of activity can cause siltation in nearby waterbodies, release of radioactive materials to groundwater, discharge of acid mine drainage and depletion of water supplies in aquifers.

7. Hydrologic modification. Dams, canals, channelization and other alternations to the flow of a waterbody result in habitat destruction and in general water quality deterioration.

Abbreviations were used for the nonpoint source categories in the NPS data tables which are found in each basin write-up on the following pages. Those abbreviations correspond to the sources as described below:

AG	=	Agricultural runoff
RE	=	Resource extraction or mining
SL	=	Silviculture or for operations
LD	=	Land disposal
UR	=	Urban runoff
CN	=	Construction site runoff
HM	=	Hydrologic Modification
OT	=	Other nonpoint source
IND	=	Industrial site runoff
STP	=	Sewage treatment plant

Data for the last two point source categories were not obtained from the 1994 NPS assessment survey, but rather they come from the 1992 305(b) Report.

Respondents were provided with 15 choices of pollutants and 9 choices of symptoms for use in characterizing the status of a watershed. Pollutant choices or categories and their descriptions are provided below:

1. Nutrients. An imbalance of nitrogen and or phosphorus which resulted in algal blooms or nuisance aquatic plant growth. Standards for Class III waterbodies are based on this criteria.
2. Bacteria. This refers to the presence of high levels of coliform, strep and enteric fecal organisms which cause the closure of waters to swimming and shellfishing.
3. Sediments. Soil erosion which results in high levels of turbidity.
4. Oil and Grease. Hydrocarbon pollution resulting from highway runoff, marina, and industrial areas. Their presence is evidenced as a sheen on the water surface.
5. Pesticides. These class of chemicals can be found in runoff from agricultural lands and some urban areas.
6. Other Chemicals. General category for other chemicals besides pesticides and oil and grease, typically associated with landfills, industrial land uses and hazardous waste sites.

7. Debris. This category includes trash ranging from Styrofoam plates and cups to yard clippings and dead animals.
8. Oxygen Depletion. Low levels of dissolved oxygen in the water column resulting in odor problems (anoxic waters) and fish kills.
9. Salinity. Changes in salinity caused by too much or too little freshwater inflows. Typical results are declines in the fishery and changes in species composition.
10. pH. Change in the acidity of surface waters with resultant declines in fisheries and other changes to flora and fauna, such as reductions in diversity or abundance.
11. Metals. Anthropogenically enriched levels of trace metals commonly associated with urbanized watersheds and marinas.
12. Habitat Alteration. Landuse activities which adversely affect the resident flora and fauna. Included with habitat alteration is habitat loss.
13. Flow Alteration. Landuse activities which influence the flow characteristics of a watershed resulting in adverse affects upon flora and fauna.
14. Thermal Pollution. Activity which changes local temperature of receiving water relative to ambient temperature.
15. Other Pollutants. General category used to describe activities and impacts not described in the other 14 categories.

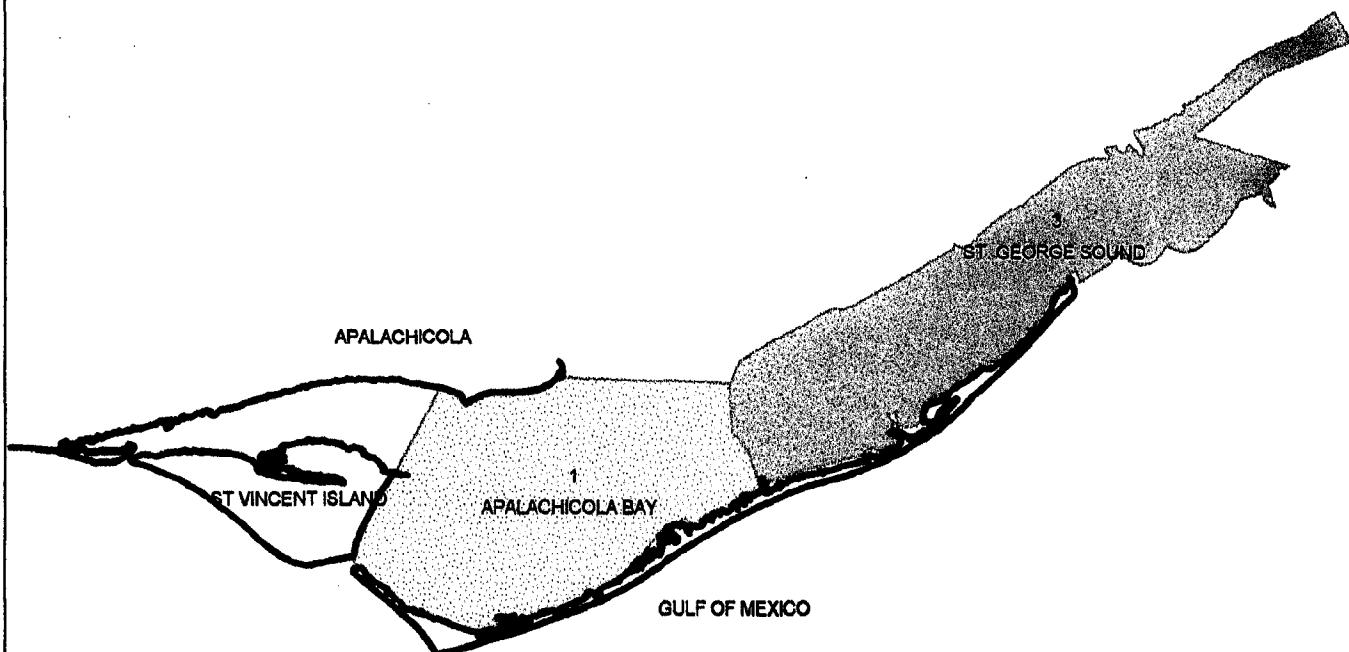
Responses of waterbodies to the above listed sources of pollutants were defined as symptoms. The nine symptoms used for categorization are defined as follows:

1. Fish Kills. Dead and dying fish caused by designated source of pollution.
2. Algal Blooms. Excessive growth of algae resulting from nutrient enrichment.
3. Aquatic Plants. Density of exotic and nuisance plants such that impairment of the waterbody occurs. Nutrient enrichment is usually the cause.
4. Turbidity. High suspended sediment loads in water column resulting from soil erosion. Effects on the waterbody include smothering of benthos and reduced light penetration with resultant loss of plant and algal productivity.
5. Odor. Unpleasant smells resulting from low dissolved oxygen conditions (anoxia) and or fish kills.
6. Declining Fisheries. Reduction in landings of or increases in catch per unit effort to catch game and commercial species indicating loss of productive fishery.
7. No Swimming. Closure of recreational swimming areas due to public health risks, usually caused by high coliform bacteria counts.
8. No Fishing. Closure of recreational or commercial fishing areas because of threats to human health from elevated bacteria counts or levels of contaminants.

9. Other Symptoms. General category used for information that cannot be placed in any other category.

Making Use Support Determinations

EPA has revised its criteria for determining the status of waters as documented in Appendix B of the Guidelines for the Preparation of the 1994 State Water Quality Assessments (305(b) Report). Often, a variety of assessment techniques were available for each watershed (e.g., chemical data, biological data and NPS survey results) and in this case a use decision was made based on integrating all the information. If quantitative data were available on the water quality of a waterbody (through the Trophic State Index or Water Quality Index) then the designated use of the waterbody was determined from the quantitative information, and if no quantitative data were available, then the qualitative NPS survey results were used to estimate designated use of the waterbody. Current data was available for assessment of about 1100 watersheds, historic data was used in 400 watersheds, and qualitative data was used in 1000 watersheds. The NPS survey provided all the information on sources of pollution (e.g. urban or construction runoff) and part of the information on causes and symptoms of pollution. Integrating the information from the quantitative (STORET) analysis and the qualitative NPS survey was not easy, but many additional watersheds were assessed based on the results of the integration. In the future, the two techniques should blend together much better through increased coordination of efforts.



APALACHICOLA BAY BASIN
03130014

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN



APALACHICOLA BAY BASIN

Basic Facts

Drainage Area: 200 square miles

Major Land Uses: basin is mostly water

Population Density: low (Apalachicola, Eastpoint, St. George Island)

Major Pollution Sources: dredging, commercial fishing and fish processing

Best Water Quality Areas: St. George Sound

Worst Water Quality Areas: along shore marinas and/or seafood processing houses

Water Quality Trends: stable quality at one site

OFW Waterbodies:

Apalachicola River and Bay National Estuarine Research Reserve

Apalachicola Bay State Aquatic Preserve

St. Vincent National Wildlife Refuge

SWIM Waterbodies:

Apalachicola Bay/St. George Sound

Reference Reports:

Apalachicola Bay Dredged Material Disposal Plan, DEP
(Tallahassee), 1986

Apalachicola Bay SWIM Plan, NFWFMD, 1992

Apalachicola Bay BAS, DEP (Pensacola), 1986

Apalachicola Bay Management Plan, DEP, 1988

Basin Water Quality Experts:

Steve Leitman, Fla. Defenders of the Environment, 904/627-3527

Tom Savage, DEP (Tallahassee), 904/488-1344

David Heil, DEP (Tallahassee), 904/488-5471

Glenn Butts, DEP (Pensacola) 904-444-8380

Donald Ray, DEP (Pensacola) 904-444-8300

In the News

* Projects for oyster culturing are ongoing.

* See Apalachicola River Basin for other applicable news.

* In November 1993 the Bay was temporarily closed after 24 people reported

illnesses after eating oysters from the Bay. Center for Disease Control and Prevention reported on 6/24/94 that routine testing for bacteria in oyster beds apparently is insufficient to prevent food poisoning after finding despite testing just days prior to oyster harvesting in Apalachicola Bay 45 people came down with food poisoning. Ten people were hospitalized for more than a day.

Ecological Characterization

The Apalachicola Bay Basin encompasses approximately 200 square miles of estuary area including St. Vincent Sound, East Bay, Apalachicola bay and St. George Sound. The bay system is the terminus of a 20,000 square mile basin which extends to a point north of Atlanta, Georgia. The Bay is defined by the barrier islands: St. George Island, Cape St. George and St. Vincent Island. Communication with the Gulf of Mexico is through several natural channels: East Pass, West Pass and Indian Pass, and through Sikes Cut, a U.S. Army Corps of Engineers (COE) maintained channel between Cape St. George and St. George Island. The major inflow into the bay is the Apalachicola River with an average flow of 25,000 cfs varying seasonally from less than 15,000 to greater than 100,000 cfs. The basin is primarily the bay water, but also encompasses drainage from the City of Apalachicola and the barrier islands.

The drainage is sparsely developed. The north shore is lined by individual residences, forestry lands and three small urban areas. Apalachicola, the largest city in the basin, is near the mouth of the river. St. George Island is developed for residential use, mostly in the middle third of the island. These residences, hotels and small businesses use septic tanks. Other barrier islands are undeveloped. A bridge crosses the Bay from East Point to St. George Island.

Productivity in Apalachicola Bay is based on the large amount of detritus entering the bay via the Apalachicola River. The bay waters are generally more turbid and less saline than many of Florida's other estuaries. However, away from the mouth of the river, particularly in St. George Sound, waters are clearer and support more seagrasses. The bay system supports a very productive shrimp fishery and is famous for its oysters.

The entire bay as well as the Apalachicola River has been declared an Outstanding Florida Water. It is also the largest National Estuarine Research Reserve. The bay area is an Area of Critical State Concern which requires more intensive regulation of planning and development by the State. The Bay is a State Aquatic Preserve and a priority SWIM waterbody. UNESCO has designated the Bay as an International Biosphere Reserve. Clearly, the State and nation recognize its value.

Anthropogenic Impacts

The Bay has good water quality. The most serious threats to the water quality in the bay are associated with nonpoint sources from the more urbanized areas in the basin. In the northern part of the bay, untreated stormwater runoff from the City of Apalachicola and nearby fish-houses have had a localized impact on the bay. The City of Apalachicola must upgrade the domestic WWTP to current standards for wetland discharge. Problems associated with fish-houses include high BOD from fishing wastes and pollutants due to boat traffic, docking and fueling. These problems are also found in Eastpoint which is covered in the New River Basin.

The Bay is often closed to shellfishing due to increased bacteria counts, usually associated with rainfall and high flows from the Apalachicola River.

In the southern Bay area, there has been rapid development of St. George Island, and there is concern over septic tank leachate into the bay. The Department of Health and Rehabilitative Services conducted a 1986 study of septic tanks on the island and found that 23% of the 724 tanks were failing, and that many of them were poorly located with respect to water tables and the required 50-foot setback. A centralized wastewater treatment facility was proposed for construction, but both its design and payment responsibility were controversial. The compromise is a requirement that all new development use aerobic treatment systems and a program to require upgrading of existing systems. There is a boat basin on the island that receives runoff from a shopping area and wastes associated with the mooring, fueling, and off-loading activities of oyster boats. A permit to build a 150 wet slip/120 dry slip marina near Sikes Cut is currently being assessed.

Other man-induced threats to the bay are over-fishing and dredging activities by the COE. Several controversies surround both issues. Maintenance channels within the bay and the river have temporary turbidity effects in the water column and have more lasting effects on the biological and sediment quality of the bay due to siltation.

Ruppia, a submersed aquatic plant that serves as a nursery area for fish and wildlife was noted returning just outside the river mouth after dredging 16 years earlier. The dredged channel between the river and Green Point (watershed #2) with shoreline seafood processing facilities experienced low dissolved oxygen concentrations and a minor fishkill last summer.

*** USGS HYDROLOGIC UNIT: 03130014 APALACHICOLA BAY

SURFACE WATER QUALITY DATA FOR 1970-1983
MEDIUM VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

BOD-BIOLOGICAL OXYGEN DEMAND MG/L	DO-DISSOLVED OXYGEN MG/L	TURB-TURBIDITY MG/L
ALKALINITY ME/L	DO-SAT-DO % SATURATION	WQI-WATER QUALITY INDEX
SALT-ALKALINITY ME/L	NAT-TOTAL SUBSTRATE DIVERSITY	
ART-ARTIFICIAL SESTATE DI	NITRO-TOTAL NITROGEN MG/L	
YEAR-BEGINNING SAMPLING YEAR	FBLU-FECL CALIFORNIA MPN/100ML	TSI-TROPHIC STATE INDEX
COND-CONDUTIVITY UMSRS	FLOW-FLOW CFS	TSS-TOTAL SUSPENDED SOLIDS MG/L
BACK-BACKS BIOC INDEX		

**SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP**

** USGS HYDROLOGIC UNIT: 03130014 APALACHICOLA BAY

WATER BODY	TYPE	ESTUARY	PARTIAL	FAIR	GOOD	EXCELLENT
1	APALACHICOLA BAY	-	-	-	-	-
2	APALACHICOLA BAY	-	-	-	-	-
3	ST. GEORGE SOUND	YES	-	-	-	-

1984 - 1993 TRENDS										1984 - 1993 TRENDS																			
QUALITY RANK										QUALITY RANK																			
W	T	T	C	P	A	T	B	T	D	T	F	<	W	T	T	C	P	A	T	B	T	D	T	F	<				
OVER-10 OR S	N	P	H	D	H	L	U	S	O	O	O	C	E	L	OVER-10 OR S	N	P	H	D	H	L	U	S	O	O	O	C	E	L
ALL	I	I	I	I	I	I	I	I	I	I	I	I	I	I	ALL	I	I	I	I	I	I	I	I	I	I	I	I	I	
WQI	MEETS OR USE ?	TREND	MEETS OR USE ?	TREND	MEETS OR USE ?	TREND	WQI	MEETS OR USE ?	TREND	MEETS OR USE ?	TREND	MEETS OR USE ?	TREND	MEETS OR USE ?	TREND	MEETS OR USE ?	TREND												
PLEASE READ THESE COLUMNS VERTICALLY																				DEGRADATION SOURCES, PRESENT CONDITIONS									

WATER BODY TYPE: ESTUARY
NAME _____
D _____
1 APALACHICOLA BAY
2 APALACHICOLA BAY

1984 - 1993 TRENDS									
QUALITY RANK	OVER-Q	T	T	C	S	P	A	T	T
ALL	I	I	I	N	P	D	H	L	I
WQI	TREND	MEETS	OR	USE ?	TSI				

<--- PLEASE READ THESE COLUMNS VERTICALLY

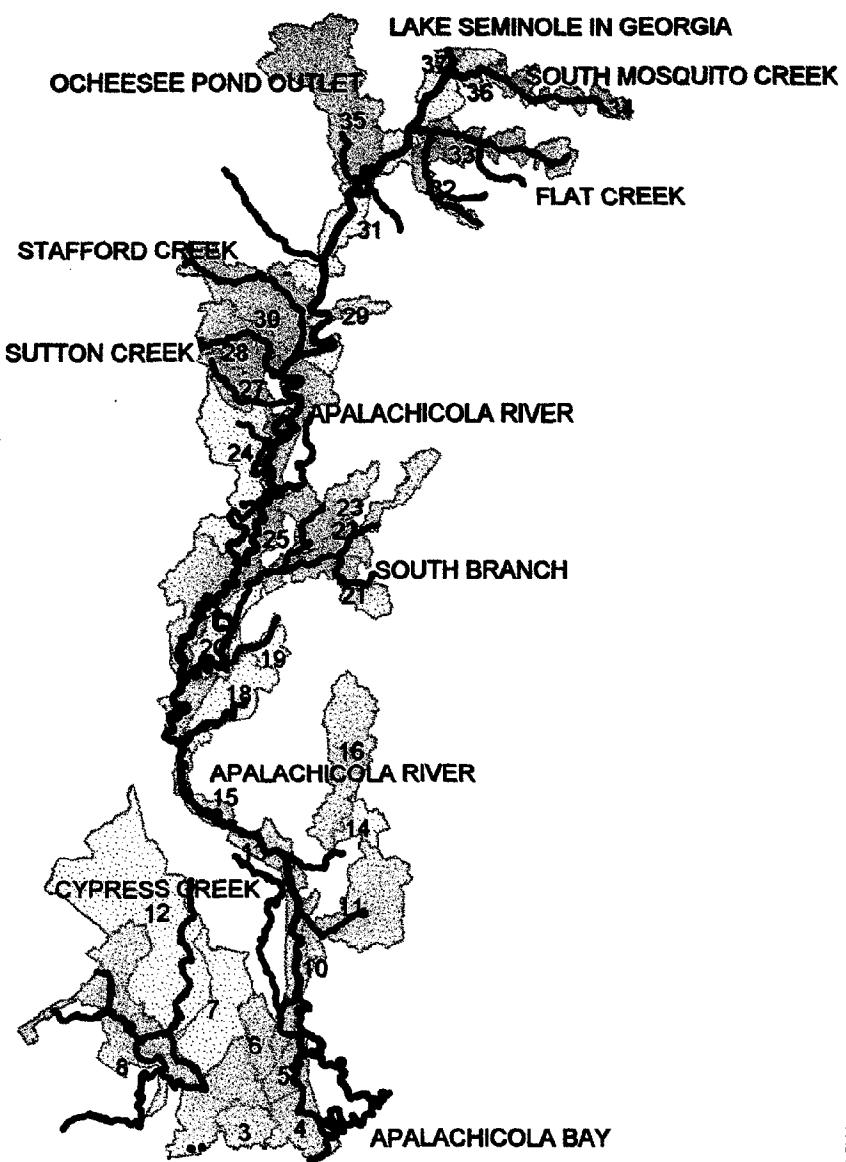
DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

WATER BODY TYPE: ESTUARIES
NAME _____
D _____
1 APALACHICOLA BAY
2 APALACHICOLA BAY

TEMPERATURE	TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES	WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS
DO-SATURATION	TCOL-TOTAL COLIFORM
FCOL-FEICAL COLIFORM	TEMP-TEMPERATURE
FLOW-FLOW	TN-NITROGEN
CO-BIOCHEM. OXYGEN DEMAND	TOC-T-ORGANIC CARBON
PH-CHLOROPHYLL A	TP-PHOSPHORUS
DISSOLVED OXYGEN	TSS-TOTAL SUSPENDED SOLIDS
DO-SATURATION	TCOL-TOTAL COLIFORM
FCOL-FEICAL COLIFORM	TEMP-TEMPERATURE
FLOW-FLOW	TN-NITROGEN
MEETS USE-MEETS DESIGNATED USE	TOC-T-ORGANIC CARBON
PH-PH	TP-PHOSPHORUS
SD-SPECIET DISC METERS	TSS-TOTAL SUSPENDED SOLIDS

LEGEND:

ALK-ALKALINITY	DOSAT-DO-SATURATION
CD-BIOCHEM. OXYGEN DEMAND	FCOLI-FECAL COLIFORM
CHLOROPHYLL A	FLOW-FLOW
CHLORINATED OXYGEN	MERIS USE-MEETS DESIGNATED
DISCH-DISCHARGE	PH-PH
DO-DOSE	ST-STRENGTH DISCH. METERS



APALACHICOLA RIVER BASIN
03130011

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



APALACHICOLA RIVER BASIN

Basic Facts

Drainage Area: 2,000 square miles (in Florida)

Major Land Uses: silviculture, agriculture and wetlands

Population Density: low (Chattahoochee, Blountstown, Apalachicola)

Major Pollution Sources: dredging and boat/barge traffic

Best Water Quality Areas: most of Apalachicola River, seepage tributaries

Worst Water Quality Areas: Hog Branch, Kennedy Creek

Water Quality Trends: stable quality at three sites

OFW Waterbodies:

Apalachicola River

Apalachicola River and Bay National Estuarine Research Reserve

SWIM Waterbodies: Apalachicola River

Reference Reports:

Apalachicola River Dredged Material Disposal Plan, DEP,
(Tallahassee), 1984

Apalachicola Bay SWIM Plan, NFWFMD, 1992

Apalachicola Bay BAS, DEP (Pensacola), 1986

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Basin Water Quality Experts:

Don Ray, DEP (Pensacola), 904/444-8300

Steve Leitman, Fla. Defenders of the Environment, 904/627-3527

Tom Savage, DEP (Tallahassee), 904/488-1344

Homer Royals, FGFWFC, 904/357-6631

Ted Hoehn, DEP (Tallahassee), 904/488-0784

Ken Jones, NFWFMD, 904/539-5999

Glenn Butts, DEP (Pensacola) 904-444-8380

In the News

* The SWIM Plan for the Apalachicola Bay and River System has been approved.

* A controversial plan by the Corps of Engineers to divert more water from the upper basin for Atlanta and a water control plan for the reservoir

system has been dropped. In exchange, the states of Florida and Alabama have agreed to suspend a year-old lawsuit over water supply and the water control plan. The Corps of Engineers and the states have started a multi-million dollar, 3-year study of the water resource needs and demands of the tri-river system. Florida, Georgia and Alabama will each contribute \$250,000 per year to the study.

Ecological Characterization

The Apalachicola River is formed by the confluence of the Flint and Chattahoochee Rivers at Lake Seminole. In Florida, the Apalachicola River flows 107 miles southward from the Jim Woodruff Dam (near the City of Chattahoochee) to the Apalachicola Bay at Apalachicola. The entire Apalachicola-Chattahoochee-Flint drainage area encompasses over 20,000 square miles with only 12% in Florida. The Apalachicola, with an average flow of about 25,000 cfs, has a greater flow than any other Florida river.

Flow varies considerably with the season, ranging from about 12,000 cfs in the fall to over 100,000 cfs in the winter and early spring. Flow variability is important to the ecological function of the river. During high flows, the river overflows its banks into its extensive floodplain (1-5 miles wide). The detritus carried by the river, particularly during flooding, provides the primary food source for Apalachicola Bay. The bay supports major fishing and shellfishing industries.

The Apalachicola basin is unique in Florida since it is the only river that has its headwaters in the Appalachian Piedmont outside the coastal plain. Consequently, the area contains numerous Appalachian-originated species found nowhere else in Florida. Additionally, the high bluffs, deep ravines and seepage streams (steepheads) provide the basin with both beautiful scenery and special habitat. This area has the highest floral and faunal diversity in the State.

Florida's portion of the basin is sparsely populated, and much of the adjacent land is in public ownership. Land use in the upper Apalachicola (above the Chipola River confluence) consists primarily of forestry and agriculture. In the lower Apalachicola, land is mostly forested or wetlands. The largest cities in this basin are Chattahoochee and Apalachicola.

Anthropogenic Impacts

Water quality in the majority of the Apalachicola River Basin is very good. The River is, together with the Bay, an Outstanding Florida Water and a National Estuarine Research Reserve. In fact, biological samples from some of the tributaries to the river indicate near

pristine conditions. These tributaries are Rock Creek, Flat Creek, Crooked Creek (and Sweetwater Creek, not shown on map). One tributary in the upper basin (Lower Ocheesee Creek) had severe erosion/siltation problems from unpaved roads and farm runoff.

The river and bay are dredged and maintained for barge navigation by the U.S. Army Corps of Engineers. It is one of the Corps' most expensive (per ton-mile) projects in the country. In addition to the sporadic disruption by the dredges, the tug and barge traffic also stirs up the sediments. Barge cargo primarily consists of gravel, fertilizer, and oil. Prior to entering Florida, the river system receives numerous discharges from Atlanta and other urbanized areas (textile mills, wastewater treatment plants, steam power plants, and a nuclear power plant) and extensive runoff from the agricultural areas of Alabama and Georgia. Sediment and water quality pollution are somewhat contained at the Jim Woodruff Dam.

In addition to upstream point sources, Florida has a few dischargers. Both Florida State Hospital and the City of Chattahoochee WWTP discharge to Mosquito Creek. Fifth year bioassessment for City of Chattahoochee WWTP was conducted in December 1993. Results did not find biological impairment in Mosquito Creek due to the City WWTP discharge. The findings did suggest nutrient enrichment is occurring in Mosquito Creek from point source discharges. Algal growth potential results from the Florida State Hospital WWTP and the Chattahoochee WWTP are a cause for concern. Florida State Hospital will be evaluated in October 1994. South Mosquito Creek at C-379 B has severe stream habitation alteration due to impounding resulting in cattail replacing native vegetation. The Scholtz Steam Power Plant lies below Sneads and discharges into the Apalachicola River. The City of Blountstown WWTP discharges to Sutton Creek which has had problems in the past. The City of Blountstown has been informed that alternatives to the current method of effluent disposal are necessary. They must either upgrade to AWT or go to upland disposal. DEP awaits their decision on which direction they will proceed. Finally, the Apalachicola City WWTP, which previously discharged to Scipio Creek, has been upgraded and now discharges to wetlands, however the current discharge to wetlands is not adequate. They are currently operating under a Final Order to either further upgrade the facility or remove their discharge from their present location. Scipio Creek is also subject to pollution from considerable shrimp and fishing boat traffic and a marina. The marina is currently making renovations including a pump-out facility. These upgrades should help to improve the conditions in this creek.

An Executive Coordinating Committee for the Apalachicola-Chattahoochee-Flint (ACF) Basin was formed by a 1992 Memorandum of Agreement signed by the states of Florida, Alabama and Georgia and the U.S. Army Corps of Engineers. Its purpose is the oversight of the comprehensive study for the ACF and Alabama-Coosa-Tallapoosa (ACT) river basins, the development of basinwide management plans and to discuss and attempt to resolve interstate disputes until a permanent coordination mechanism is in place.

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03130011 APALACHICOLA RIVER

'X' = EXCEEDS SCREENING CRITERIA
'-' = MISSING DATA

SCREENING VARIABLES AND CRITERIA

		RANK	DATA RECORD	TN	STREAM	LAKE	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTI	BIOLOGICAL DIVERSITY	CHLA	SECCHI DISC	
WATERSHED ID	NAME	1	WOI OR TSI	CURRENT	TP	TP	PH	ALK	TURB & TSS	COND	DO	COLIFORM BACTI	BIOLOGICAL DIVERSITY	CHLA	SECCHI DISC	
		2	WOI OR TSI	HISTORICAL	IN>2.0	TP>.46	TP>.12	ALK>20	TURB>16.5	COND>1275	BOD>3.3	DO<4	COLIFORM BACTI	BIOLOGICAL DIVERSITY	CHLA>40	SECCHI DISC
		3	WOI OR TSI	HISTORICAL			PH>8.8	ALK<5.2	TURB>18	COND>102	COD>10.5	DO>4	COLIFORM BACTI	BIOLOGICAL DIVERSITY	CHLA>1.5	SECCHI DISC
*	WATER BODY TYPE: ESTUARY	4	UNKN	Current	1	0	-	0	1	x	1	0	1	0	1	-
*	WATER BODY TYPE: LAKE	5	CAMEL LAKE REC AREA	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-
	AMONITA LAKE SLOUGH	6	FAIR Historical	1	0	-	x	0	-	x	-	-	-	-	-	-
	OCHEESEE POND OUTLET	7	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
*	WATER BODY TYPE: STREAM	8	EQUINOXIC CREEK	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-
	HUCKLEBERRY CREEK	9	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	APALACHICOLA RIVER	10	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	APALACHICOLA RIVER	11	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	SAUL CREEK	12	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	CYPRESS CREEK	13	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	JACKSON RIVER	14	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	APALACHICOLA RIVER	15	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	BLACK CREEK	16	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	KENNEDY CREEK	17	UNKN Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	BLVER OF SEYX	18	FAIR Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	GREGORY MILL CREEK	19	FAIR Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	FLORIDA RIVER	20	FAIR Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	SOUTH BRANCH	21	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	BIG GOLLY CREEK	22	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	LITTLE GOLLY CREEK	23	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	APALACHICOLA RIVER	24	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	COON CREEK	25	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	SUTTON CREEK	26	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	LITTLE SWEETWATER CR	27	GOOD Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
	STAFFORD CREEK	28	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	APALACHICOLA RIVER	29	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	CROOKED CREEK	30	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	FLAT CREEK	31	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	SOUTH MOSQUITO CREEK	32	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	MOSQUITO CREEK	33	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
	APALACHICOLA RIVER	34	FAIR Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
		35	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-
		36	FAIR Historical	1	0	-	0	x	-	0	-	-	-	-	-	-
		37	GOOD Current	1	0	-	0	x	-	0	-	-	-	-	-	-

LEGEND:
ALK=ALKALINITY
DO=DISSOLVED OXYGEN
COND=CONDUTIVITY
DIART=DIART-1969 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT=NATURAL SUBSTRATE DIVERSITY
TBI=BIOTIC INDEX
BIOL-DIV=BIOLOGICAL DIVERSITY
CHLA=CHLOROPHYLL
COND=FACULTATIVE
DO=DO<4
DIART=DIART<1.5
DINAT=DINAT<5.5
FECAL=FECAL-ARTIFICIAL
FECAL=FECAL>40
FECAL=FECAL>1.5
FECAL=FECAL>5.5
HISTORICAL=1970 TO 1988
OXYGEN=OXYGEN DEMAND-BOD, COD, TOC
PH=PH
TBI=TBI-TURBIDITY
TN=NITROGEN
TP=TP-PHOSPHORUS
TSS=TOTAL SUSPENDED SOLIDS
TURB=TURBIDITY
TN-TURBIDITY
TP-TURBIDITY
CHLA=CHLOROPHYLL
DISC=DISC METERS

WQI OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WQI OR TSI, IS
BASED ON WATERBODY TYPE
SD=SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03130011 APALACHICOLA RIVER

X-DEGRADING TREND

0=STABLE TREND

+ =IMPROVING TREND

. =MISSING DATA

- =NO DATA

1984 - 1993 TRENDS

<--- PLEASE READ THESE COLUMNS VERTICALLY

WATERSHED ID	NAME	WATER BODY TYPE:	ESTUARY NO	UNKN|	1984 - 1993 TRENDS									
					QUALITY RANK OVER- WQI	TREND OR MEETS USE?	T|T|C|S|P|A|T|T|B|T|D|D|T|F|T|F	L|Q|O|R|S|N|P|H|D|U|L|U|O|O|C|E|L	A|L|I|L|A|B|T|I|P|W	D|C|S|O|O|N|O				
9	HORSESHOE CREEK		NO	UNKN|										

* WATER BODY TYPE: LAKE
1 CAMEL LAKE REC AREA
24 AMONITA LAKE SLOUGH
35 OCHERSEE POND OUTLET

* WATER BODY TYPE: STREAM
2 EQUILUX CREEK
3 HUCKLEBERRY CREEK
4 APALACHICOLA RIVER
5 APALACHICOLA RIVER
6 SAUL CREEK
7 CYPRESS CREEK
8 JACKSON RIVER
10 APALACHICOLA RIVER
11 ORT GARDEN CREEK
12 CYPRESS CREEK
13 APALACHICOLA RIVER
14 HOG BRANCH
15 APALACHICOLA RIVER
16 BLACK CREEK
17 KENNEDY CREEK
18 River of Syx
19 GRIGORY M.L. CREEK
20 FLORIDA RIVER
21 SOUTH BRANCH
22 BIG GOOLY CREEK
23 LITTLE GOOLY CREEK
25 APALACHICOLA RIVER
27 COON CREEK
28 SUTTON CREEK
29 LITTLE SWETWATER CR
30 STAFFORD CREEK
31 APALACHICOLA RIVER
32 CROOKED CREEK
33 FLAT CREEK
34 SOUTH MOSQUITO CREEK
36 MOSQUITO CREEK

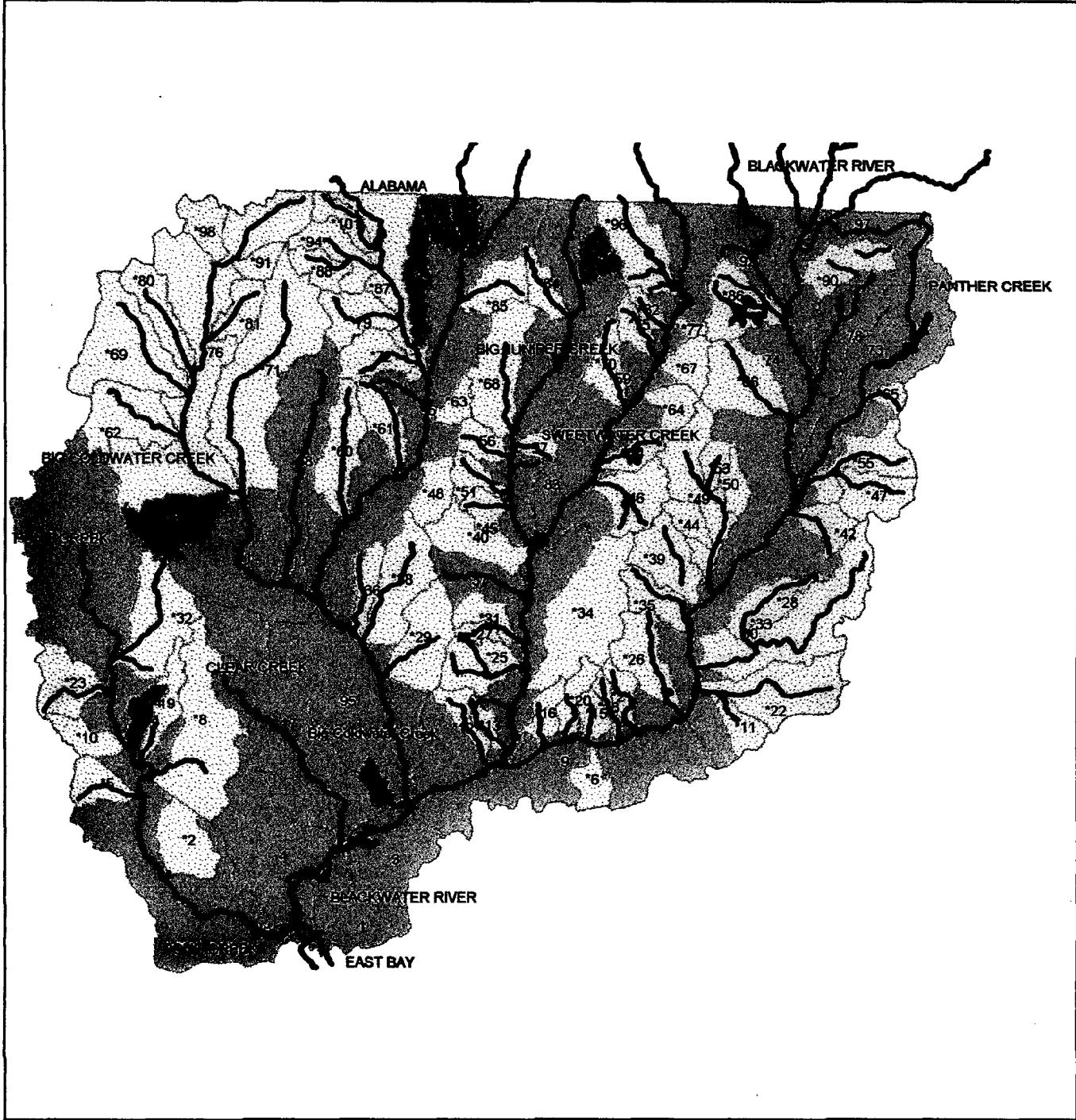
DO-SAT-DO SATURATION
FOCOL-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS

TOCl-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T-ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS

TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN

LEGEND:



BLACKWATER RIVER BASIN
03140104

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



BLACKWATER RIVER BASIN

Basic Facts

Drainage Area: 950 square miles (about 860 square miles in Florida)

Major Land Uses: silviculture, agriculture

Population Density: very low (Milton, Whiting Field NAS)

Major Pollution Sources: locally around road construction areas,
clay/sand roads

Best Water Quality Areas: most of the basin

Worst Water Quality Areas: areas assessed by nonpoint source survey

Water Quality Trends: stable quality at two sites, improving quality on
upper Blackwater River

OFW Waterbodies:

Blackwater River/Juniper Creek (within State Forest)

SWIM Waterbodies: part of Pensacola Bay System SWIM watershed

Reference Reports:

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Pensacola SWIM plan

Basin Water Quality Experts:

Don Ray, DEP (Pensacola), 904/444-8300

Homer Royals, FGFWFC, 904/357-6631

Gray Bass, FGFWFC, 904/957-4172

Glenn Butts, DEP (Pensacola) 904-444-8380

In the News

- * Fish stocking project ongoing in hopes of improving striped bass population.
- * Recent severe flooding has apparently improved condition of fish habitat.
- * Health advisories recommending limited consumption of largemouth bass due to mercury contamination have been issued for the Blackwater River.

Ecological Characterization

The Blackwater River originates north of Bradley, Alabama, and flows approximately 58 miles prior to entering Blackwater Bay in northwestern Florida. The basin drains about 860 square miles, mostly in Santa Rosa and Okaloosa Counties. Average discharge of the Blackwater River is approximately 400 cfs at a location 35 miles upstream of the mouth. Major tributaries of the Blackwater River include Juniper Creek, Big Coldwater Creek, and Pond Creek. The basin's rivers are of the blackwater type, stained reddish-brown by tannic acids from swamp and forest drainage. The rivers also receive considerable groundwater flow from the sand and gravel aquifer. In general, the rivers are swift and shallow and characterized by beautiful white sand bars. The Blackwater River flows through Blackwater State Forest and is a favorite of canoeists.

Land use in the basin is primarily state forest land, silviculture and some agriculture. There are no major urban areas in the basin.

Anthropogenic Impacts

Overall water quality in this basin is excellent, and the Blackwater River is designated an Outstanding Florida Water.

The US Navy Whiting Field WWTP was issued a no discharge wasteload allocation in March, 1994 due to water quality violations in Clear Creek discovered during the 5th year survey conducted in October 1993. The Navy is currently studying methods for upland disposal. A 5th year survey for the City of Milton WWTP is scheduled for August 1994.

Ongoing gas pipeline construction across the District is causing turbidity, sedimentation, and habitat destruction at crossing locations in the basin. Many subdivisions have been constructed in the Pond Creek watershed between Pace and Chumuckla in the past couple of years with resulting nonpoint source problems creating flooding, erosion, and sedimentation. The University of Florida Agricultural Research Center located in Pond Creek headwaters had dumped waste pesticides in the past and sludge from Pensacola wastewater treatment facilities was experimentally land applied without DEP monitoring.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140104 BLACKWATER RIVER

WATER BODY TYPE:	STREAM	WATERSHED DATA RECORD										WATERSHED INDICES																	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	WATER CLARITY	TSS	DO	DOSAT	EDB	COD	TOC	PH	ALK	OXYGEN DEMAND	PH ALKALINITY	TROPHIC STATUS	COLIFORM	NITRO PROS CHLA	TOTAL FCCL	ART BECK	NAT	COND FLOW	COND FLOW	COND FLOW	TSI
PELICAN BAYOU	1	88	88	Historical	4.0	-	20	3	6.5	73	0.2	-	-	-	-	-	-	-	7.1	-	0.79	0.01	2	50000	-	-	32	-	
BLACKWATER RIVER	3	80	80	Historical	5.0	1.2	30	9	6.7	81	0.8	-	-	-	-	-	-	-	5.5	-	0.28	0.02	3	230	23	-	16	-	
BLACKWATER RIVER	4	93	93	Current	9.0	1.3	40	7	7.6	86	0.4	-	-	-	-	-	-	-	5.9	7	0.62	0.03	2	160	75	-	140	-	
BLACKWATER RIVER	9	93	93	Current	13.0	0.8	50	5	8.0	89	-	-	-	-	-	-	-	-	5.0	5	0.43	0.02	-	200	51	-	20	-	
CLEAR CREEK	7	92	93	Current	3.8	0.6	21	1	8.0	85	-	-	-	-	-	-	-	-	5.8	1	0.63	0.01	-	-	-	-	22	14	
POND CREEK	14	93	93	Current	4.7	1.3	35	3	7.7	79	0.3	-	-	-	-	-	-	-	5.8	4	0.59	0.02	-	731	110	-	42	-	
BLACKWATER RIVER	10	80	80	Historical	9.5	-	45	17	8.1	89	0.5	-	-	-	-	-	-	-	5.6	2	0.39	0.02	-	-	-	-	22	24.8	
BIG JUNIPER CREEK	6	76	76	Historical	13.0	-	-	-	8.4	93	-	-	-	-	-	-	-	-	6.0	-	0.01	-	-	-	-	-	-	20	28
WEST FORK	11	91	92	Current	27.3	0.6	43	14	8.0	87	0.3	-	-	-	-	-	-	-	5.8	2	1.72	0.04	-	750	473	-	39	-	
EAST FORK	12	90	92	Current	15.0	0.4	35	8	7.8	83	0.2	-	-	-	-	-	-	-	5.6	1	0.36	0.04	-	360	35	-	20	-	
MANNING CREEK	6	92	92	Current	12.0	0.3	70	7	7.4	70	-	-	-	-	-	-	-	5.8	2	0.87	0.02	-	20000	2800	-	22	-		
SWEETWATER CREEK	9	92	92	Current	4.8	1.0	60	2	8.1	86	-	-	-	-	-	-	-	5.4	1	0.21	0.01	-	1000	60	-	16	-		
PANTHER CREEK	13	92	92	Current	6	9.2	92	Current	9.8	0.5	60	6	-	-	-	-	-	5.5	1	0.27	0.01	-	900	44	-	20	-		
BLACKWATER RIVER	39	89	93	Current	3.0	0.7	50	3	7.9	84	0.2	-	-	-	-	-	-	4.9	1	0.48	0.02	2	400	40	-	32	124.0		
MANE CREEK	8	92	93	Current	5.3	0.4	30	3	7.2	73	-	-	-	-	-	-	-	6.1	4	0.15	0.01	-	103	-	-	25	-		
BIG JUNIPER CREEK	10	92	92	Current	6.9	0.6	45	5	7.7	95	0.5	-	-	-	-	-	-	6.2	1	0.57	0.05	-	1204	68	-	27	-		
ROCK CREEK	13	92	92	Current	2.5	0.5	30	1	7.8	74	-	-	-	-	-	-	-	5.0	1	0.39	0.01	-	500	50	-	20	-		
BIG COLDWATER CREEK	16	91	92	Current	10.3	-	38	7	8.3	87	0.3	-	-	-	-	-	-	5.7	1	1.16	0.04	-	735	141	-	40	-		
BOGGY BOTTOM CREEK	17	75	Historical	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	0	0.42	0.02	-	1260	-	-	20	-		

LEGEND:
 K-ARTIFICIALITY MG/L
 T-ARTIFICIAL SUBSTRATE DI
 G-Y-BEGINNING SAMPLING YEAR
 B-BECKINS BIONIC INDEX
 BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
 COD-CHLOROPHYLL UG/L
 COLOR-COLOR PCU
 COND-CONDUCTIVITY UMHOES

DO-DISSOLVED OXYGEN MG/L
 DOAT-4 END SATURATION
 END YR-ENDING YEAR
 FCFL-FEICAL COLIFORM MPN/100
 FLOW-FLOW CFU
 COD-BIOCHEMICAL OXYGEN DEMAND MG/L
 CHLOR-CHLOROPHYLL UG/L
 COD-CHEMICAL OXYGEN DEMAND MG/L
 COLOR-COLOR PCU
 COND-CONDUTIVITY UMHOHS

MORNS-MAXIMUM NUMBER OF SAMPLES	SD-SEICHI DISC METERS	TURB-TURBIDITY MG/L
MORNS-NATURAL SUBSTRATE DIVERSITY	TOC-TOTAL ORGANIC CARBON MG/L	WQI-WATER QUALITY INDEX
MORNS-TOTAL NITROGEN MG/L	TOTAL-TOTAL COLIFORM MPN/100ML	
MORNS-PH STANDARD UNITS	TSI-THERMOPHIC STABILITY INDEX	
MORNS-TOTAL PHOSPHORUS MG/L	TSS-TOTAL SUSPENDED SOLIDS MG/L	

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140104 BLACKWATER RIVER

* =EXCEEDS SCREENING CRITERIA
0 =WITHIN SCREENING CRITERIA
. =MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID NAME	RANK	DATA RECORD	TN	STREAM TP	LAKES TP	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTERIA	BIOTIC DIV	CHLA	SECCHI DISC
			TN>2.0	TP>.46	TP>.12	PH>8.8	ALK<20	TURB>16.5 | COND>1275 | TSS>18	BOD>3.3 COD>102	DO<4	TOT>3700 | DINAT<1.95 | FECAL>470 | DINAT<1.5	CHLA>4.0 SD<7			
			WQI OR TSI	CURRENT OR HISTORICAL											
* WATER BODY TYPE: STREAM															
1 PELICAN BAYOU	1	GOOD Historical	0	0	0	-	0	-	0	-	x	0	0	0	0
3 BLACKWATER RIVER	3	GOOD Historical	0	0	0	-	0	-	0	-	0	0	0	0	0
4 BLACKWATER RIVER	4	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
9 BLACKWATER RIVER	9	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
17 CLEAR CREEK	17	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
24 POND CREEK	24	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
30 BLACKWATER RIVER	30	GOOD Historical	0	0	0	-	x	x	0	-	0	0	0	0	0
37 BIG JUNIPER CREEK	37	GOOD Historical	0	0	0	-	x	x	0	-	0	0	0	0	0
41 WEST FORK	41	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
52 EAST FORK	52	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
58 MANNING CREEK	58	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
59 SWEETWATER CREEK	59	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
73 PANTHER CREEK	73	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
74 BLACKWATER RIVER	74	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
78 MARE CREEK	78	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
83 BIG JUNIPER CREEK	83	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
92 ROCK CREEK	92	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
95 BIG COLDWATER CREEK	95	GOOD Current	0	0	0	-	x	x	0	-	0	0	0	0	0
97 BOGGY HOLLOW CREEK	97	GOOD Historical	0	0	0	-	x	x	0	-	0	0	0	0	0

LEGEND:
COND=CONDUCTIVITY
ALK=ALKALINITY
BECK=BECK'S BIOTIC INDEX
BIOL DIV=BIOLOGICAL DIVERSITY
CHLA=CHLOROPHYLL
DO=DISSOLVED OXYGEN
DO-PH
DINAT=ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NITROGEN
DIAT=NATURAL SUBSTRATE DIVERSITY

FECAL-FEACAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TUBA-TURBIDITY
SD-SECCHI DISC METERS

WQI OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WQI OR TSI, IS
BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

=DEGRADING TREND 0=STABLE TREND 1*=IMPROVING TREND .*=MISSING DATA

WATERSHED ID	NAME	MEETS OR USE ?	WQI TREND	ALL TSI	QUALITY RANK OVER-10 or 1										1984 - 1993 TRENDS				DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
					W	T	T	C	S	P	A	T	B	T	D	D	T	F	<-- PLEASE READ THESE COLUMNS VERTICALLY
1	PELICAN BAYOU	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	BLACKWATER RIVER	YES	GOOD	0	0	0	+	0	+	0	+	0	+	0	+	0	+	0	
4	BLACKWATER RIVER	YES	GOOD	0	0	0	+	0	+	0	+	0	+	0	+	0	+	0	
9	BLACKWATER RIVER	YES	GOOD	0	0	0	+	0	+	0	+	0	+	0	+	0	+	0	
17	CLEAR CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24	POD CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	BLACKWATER RIVER	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
37	BIG JUNIPER CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
41	WEST FORK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
52	EAST FORK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
58	MANNING CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
59	SWEETWATER CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
73	PANTHER CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
74	BLACKWATER RIVER	YES	GOOD	+	+	0	0	0	x	+	+	+	+	0	0	+	0		
78	MARE CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
83	BIG JUNIPER CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
92	ROCK CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
95	BIG COLDWATER CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
97	BOGGY HOLLOW CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

* WATER BODY TYPE: STREAM

1	PELICAN BAYOU	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	BLACKWATER RIVER	YES	GOOD	0	0	0	+	0	+	0	+	0	+	0	+	0	+	0	
4	BLACKWATER RIVER	YES	GOOD	0	0	0	+	0	+	0	+	0	+	0	+	0	+	0	
9	BLACKWATER RIVER	YES	GOOD	0	0	0	+	0	+	0	+	0	+	0	+	0	+	0	

LEGEND:
 DO-SAT=DO SATURATION
 FCOLI=FCAL COLIFORM
 FLOW-FLOW
 MEETS USE-MEETS DESIGNATED USE
 PH-PH
 SD-SECCHI DISC METERS
 DO-DISSOLVED OXYGEN

TCOLL-TOTAL COLIFORM
 TEMP-TEMPERATURE
 TN-NITROGEN
 TOC-T-ORGANIC CARBON
 TP-PHOSPHORUS
 TSS-TOTAL SUSPENDED SOLIDS

TURB-TURBIDITY
 TSI-TROPHIC STATUS INDEX FOR LAKES AND ESTUARIES
 WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORED INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=BLACKWATER RIVER HUC=03140104

		N	B	S	P	O	S	A	H	T	T	O	P	F	I	U	S	N	R	H	O	O	E	T	O
M	A		U	F	R	T	S	N	D	O	I			X											
P	A		A	C	T	I	E	H	E	E	A			X											
E	S		Q	N	E	R	B	I	F	R	K			X											
I	I		3	N	E	R	B	O	C	C	R			X											
D	N		0	P	N	R	E	O	T	L	A			X											
			5	S	T	A	T	I	D	E	S			X											
1	481		W	W	W	Q	Q	Q	Q	Q	Q			X											
2*	383		LONG BRANCH	BLACKWATER RIVER	GOOD			X																	
3	24B		BLACKWATER RIVER	HURRICANE BRANCH	GOOD			X																	
4	24A		HURRICANE BRANCH	TARCLIN HEAD	POOR			X																	
5*	354		TARCLIN HEAD	BUCKET BRANCH	POOR			X																	
6*	352		BUCKET BRANCH	READER CREEK	POOR			X																	
7*	356		READER CREEK	BLACKWATER RIVER	GOOD			X																	
8*	216		BLACKWATER RIVER	HURRICANE BRANCH	GOOD			X																	
9	24		HURRICANE BRANCH	ADAMS MILL CREEK	POOR			X																	
10*	334		ADAMS MILL CREEK	SNODEN CREEK	POOR			X																	
11*	322		SNODEN CREEK	ADAMS SPRING BRANCH	POOR			X																	
12*	312		ADAMS SPRING BRANCH	CHICKEN HEAD	POOR			X																	
13	325		CHICKEN HEAD	COON CAMP	POOR			X																	
14*	313		COON CAMP	GREEN BRANCH	GOOD			X																	
15*	314		GREEN BRANCH	CLEAR CREEK	POOR			X																	
16*	303		CLEAR CREEK	WOLLETRAP BRANCH	POOR			X																	
17	260		WOLLETRAP BRANCH	DRY BRANCH	POOR			X																	
18*	299		DRY BRANCH	AYES CREEK	POOR			X																	
19*	286		AYES CREEK	SHINGLE BRANCH	POOR			X																	
20*	295		SHINGLE BRANCH	BONE CREEK	POOR			X																	
21*	296		BONE CREEK	MASH BRANCH	GOOD			X																	
22*	294		MASH BRANCH	FOND CREEK	POOR			X																	
23*	292		FOND CREEK	HORNIS CREEK	POOR			X																	
24	176		HORNIS CREEK	THREE HOLLOW HEAD	POOR			X																	
25*	287		THREE HOLLOW HEAD	POPLAR HEAD	POOR			X																	
26*	271		POPLAR HEAD	ALLIGATOR CREEK	POOR			X																	
27*	284		ALLIGATOR CREEK	EARNEST MILL CREEK	POOR			X																	
28*	225		EARNEST MILL CREEK	BLACKWATER RIVER	GOOD			X																	
29*	250		BLACKWATER RIVER	HORNIS CREEK	POOR			X																	
30	24C		HORNIS CREEK	BIG JUNIPER CREEK	GOOD			X																	
31*	257		BIG JUNIPER CREEK	WOLFE CREEK	POOR			X																	
32*	242		WOLFE CREEK	MIDDLE CREEK	POOR			X																	
33*	248		MIDDLE CREEK	PITTMAN CREEK	POOR			X																	
34*	229		PITTMAN CREEK	WEST FORK	GOOD			X																	
35*	247		WEST FORK	RED WASH BRANCH	POOR			X																	
36*	238		RED WASH BRANCH	MARS BRANCH	GOOD			X																	
37	241		MARS BRANCH	BIG BRANCH	POOR			X																	
38*	221		BIG BRANCH	MASON BRANCH	POOR			X																	
39*	220		MASON BRANCH	BLUE CREEK	POOR			X																	
40*	214		BLUE CREEK	PIRON SPRING BRANCH	POOR			X																	
41	11A		PIRON SPRING BRANCH	DUNN BRANCH	POOR			X																	
42*	218		DUNN BRANCH	BEAVER CREEK	POOR			X																	
43*	213		BEAVER CREEK																						
44*	215																								
45*	211																								
46*	193																								
47*	198																								
48*	194																								
49*	166																								

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE + ON MAP ID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE

CATNAME=BLACKWATER RIVER HUC=03140104

(continued)

NPS QUALITATIVE SURVEY RESULTS
 AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
 THE + ON MAP ID INDICATES NO STORED INFORMATION AVAILABLE FOR THIS WATERSHED
 -SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

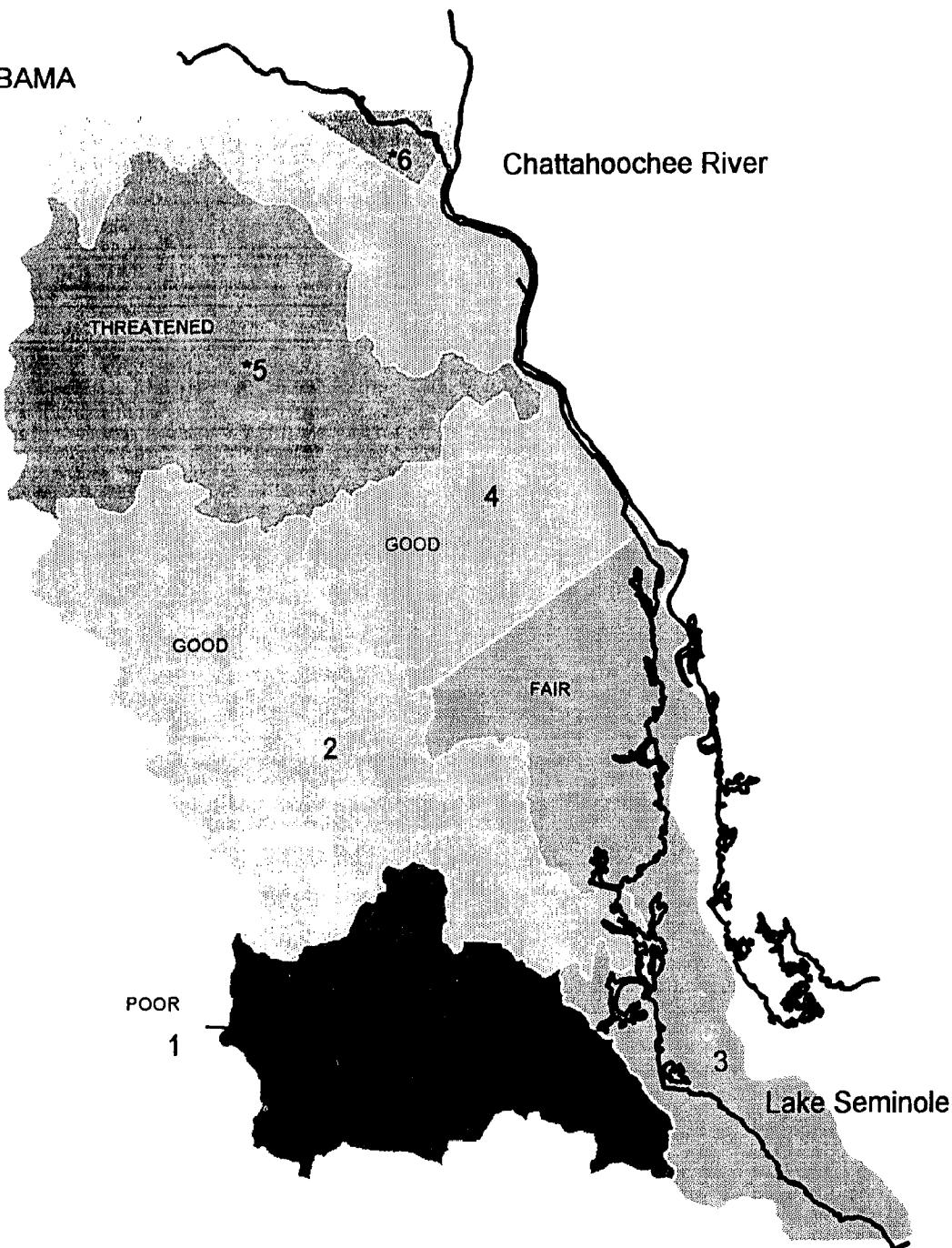
CATNAME=BLACKWATER RIVER HUC=031410104

(continued)

		N	B	S	P	O	S	O	P	T	I	T	O	P	I	T	O
M	A	U	A	E	B	T	A	H	T	I	U	I	S	N	H	O	T
A	B	W	R	T	C	D	O	L	A	H	S	R	B	H	O	E	
B	S	Q	I	E	T	I	E	X	M	B	E	E	I	D	S	F	R
P	I	3	N	E	R	M	E	Y	E	I	F	R	K	D	E	W	I
T	I	0	P	N	E	O	C	R	G	I	T	L	M	P	I	S	T
D	N	5	S	I	I	N	I	I	H	I	E	T	P	A	O	C	I
D	N	5	S	T	A	T	I	D	E	S	N	Y	H	L	T	S	Y
98*	16	COBB CREEK	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X
99*	17	YELLOW WATER CREEK	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X
100*	15	REEDY BRANCH	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X
101*	12	HAWKINS CREEK	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X

ALABAMA

Chattahoochee River



CHATTAHOOCHEE RIVER BASIN
03130004

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN



page 40

CHATTAHOOCHEE RIVER BASIN

Basic Facts

Drainage Area: 1,300 square miles (about 15% in Florida)

Major Land Uses: agriculture, silviculture

Population Density: low (in Florida, Sneads)

Major Pollution Sources: upstream sources, agriculture

Best Water Quality Areas: Chattahoochee River

Worst Water Quality Areas: Thompson Pond

Water Quality Trends: stable quality at one site

OFW Waterbodies: Three Rivers State Recreation Area

SWIM Waterbodies: part of Apalachicola River and Bay SWIM watershed

Reference Reports:

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Apalachicola Bay System SWIM Plan, NFWFMD, Revised 1992

Basin Water Quality Experts:

Gray Bass, FGFWFC, 904/957-4172

Homer Royals, FGFWFC, 904/357-6631

Don Ray, DEP (Pensacola), 904/444-8300

Glenn Butts, DEP (Pensacola), 904-444-8380

In the News

* See Apalachicola River "In the News" for applicable items.

Ecological Characterization

The Chattahoochee River Basin in Florida consists of a short stem of the Chattahoochee River itself and Lake Seminole which is an impoundment at the confluence of the Chattahoochee and Flint Rivers. Both rivers have extensive drainages in the coastal plains and are considered alluvial in nature. Intense agricultural usage in these basins contribute heavily to the sediment load delivered to Lake Seminole and give these rivers a cloudy, reddish-brown look, atypical of most Florida streams.

Lake Seminole is about 40-45 square miles in surface area of which 18 are in Florida. Typical of many impoundments, the lake has a dendritic pattern with hundreds of coves. It is heavily fished and supports several marinas and fish camps. There is also a state park on the lake that is very active in summer months. There are no urban areas draining to the lake, but there are several small developments and houses along some of the banks. However, most of the shoreline has not been cleared.

Anthropogenic Impacts

The major impacts to the water quality of the Chattahoochee River are from upstream discharges and agricultural runoff. Heavy "red clay" siltation is very apparent in the Florida reach of the river, especially after rains. This is one of the few rivers in Florida that experiences the sediment/farm/chemical type of agricultural nonpoint pollution typical of most of the southeastern states.

The U.S. Army Corps of Engineers maintains a dredged channel and locks for passage of commercial barge traffic through the Chattahoochee River, Jim Woodruff Dam and the Apalachicola River. The Corps manages lake levels and water delivery throughout the system.

The Jim Woodruff Dam was built to provide hydroelectric power and some degree of water regulation. However, it is basically a "run of the river" dam with little storage capacity, especially at high flows. The sediment and organic detritus, located in the deeper portions of the lake near the dam, have a poor macroinvertebrate community, probably due to low oxygen and perhaps some metals in the sediments. The lake had some aquatic weed problems, and the Corps annually treated certain areas with herbicides (commonly Rodeo, Sonar, and Aquatol K).

Lake Seminole now has a serious aquatic weed problem and a proposed water quality monitoring for the lake is to be funded by EPA and coordinated by DEP.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03130004 CHARTOOCHEE RIVER

WATERSHED DATA REPORT

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) US
PERIOD PRIOR TO 1989 IS EVALUATED AS HI

** * * USSS HYDROLOGIC UNIT: 03130004 CHATTANOOGA RIVER

WATERSHED DATA RECORD										WATER CLARITY										BIOMASS										WATER QUALITY INDICES			
WATERSHED NAME				BEG END PERIOD			TURB SD COLOR TSS			DISSOLVED OXYGEN			PH ALK			COLIFORM			BIOLOGICAL SPECIES DIVERSITY			COND FLOW		WQI		TSI							
#BS	YR	YR	DATA	DO	SOD	COD	DO	SOD	COD	TOC	PH	ALK	NITRO PHOS CHLA	ECCL NAT ART	BLACK	COND	COND	FLOW	COND	FLOW	WQI	TSI											
WATER BODY TYPE: LAKE																																	
1	THOMPSON POND	3	93	93	Current	-	-	-	-	-	110.0	-	8.5	-	33.5534.50	-	-	-	-	-	1180	-	-	-	100								
2	POND DRAIN	4	93	93	Current	-	-	-	-	-	55	3.5	-	-	0.85	0.07	-	-	-	-	65	-	-	-	56								
	Lake Seminole	2	89	89	Current	17.0	0.7	-	-	-	9.6	95	-	-	6.8	-	0.95	0.06	-	-	90	-	-	-	63								
WATER BODY TYPE: STREAM																																	
4	Chattahoochee River	15	89	92	Current	17.0	0.7	20	1	8.8	93	-	-	2	6.9	25	0.49	0.35	-	-	66	-	-	-	21								

LEGEND:
 K-X:ALKALINITY MG/L
 K-A:ARTIFICIAL SUBSTRATE DI
 K-B:BEGINNING SAMPLING YEAR
 K-C:BECK'S BIOTIC INDEX
 BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
 CHL-A:CHLOROPHYLL UG/L
 COD-CHEMICAL OXYGEN DEMAND MG/L
 COLOR-POLY PCU
 CONDUCTIVITY UMhos

DO-DISSOLVED OXYGEN MG/L
 TDS-NT-DO % SATURATION
 END YR-BENDING YEAR
 FECAL-FECAL COLIFORM MPN/
 FLOW-FLOW CPS

MAX. TOBS-MAXIMUM NUMBER OF SAMPLES	SD-SECCI DISC METERS	TURB-TURBIDITY MG/L
NAT-NATURAL SUBSTRATE DIVERSITY	TOC-TOTAL ORGANIC CARBON MG/L	WQI-WATER QUALITY INDEX
NITRO-TOTAL NITROGEN MG/L	TOTAL-TOTAL COLIFORM MPN /100ML	
PH-PH STANDARD UNITS	TSI-TROPHIC STATE INDEX	
PROS-TOTAL PHOSPHORUS MG/L	ISS-TOTAL SUSPENDED SOLIDS MG/L	

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'X' = EXCEEDS SCREENING CRITERIA

0 = WITHIN SCREENING CRITERIA

MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID NAME	RANK	DATA RECORD	TN	STREAM	LAKE	ALK	TURB	COND	OXYGEN DEMAND	DO	CALIFORNIA		CHLA	SECCHI DISC
											TP	TSS	BACII	BIOL DIV
1 THOMPSON POND	1	WQI CURRENT	TP>2.0	TP>.12	PH>8.8	ALK<20	TURB>16.5	COND>1275	BOD>3.3	DO<4	TP>3700	DIArt<1.95	chlA>40	SD<.7
2 POND DRAIN	2	OR	TP>.46	TP>.12	PH>8.8	ALK<20	TURB>16.5	COND>1275	BOD>3.3	DO<4	Fecal>470	DINat<1.5	chlA>40	SD<.7
3 Lake Seminole	3	TSI HISTORICAL			PH<5.2		TSS>18		COD>102	TOC>27.5			chlA>40	SD<.7
*	WATER BODY TYPE: LAKE													
1	POOR Current	X		X	0	0	X	X	X	X	0	0	0	0
2	GOOD Current	0		0	0	0	0	0	0	0	0	0	0	0
3	PAIR Current	0		0	0	0	0	0	0	0	0	0	0	0
*	WATER BODY TYPE: STREAM													
4	Chattahoochee River	GOOD Current	0	0	0	0	0	0	0	0	0	0	0	0

LEGEND:
 COND=CONDUCTIVITY
 DO=DISSOLVED OXYGEN
 ALK=ALKALINITY
 BECK=BECK'S BIOTIC INDEX
 BIOL DIV=BIOLOGICAL DIVERSITY
 CHLA=CHLOROPHYLL
 TP=PHOSPHORUS
 HISTORICAL=1970 TO 1988
 OXYGEN DEMAND=BOD, COD, TOC
 PH=PH
 TN=NITROGEN
 TOT-TOTAL COLIFORM BACTERIA
 ISS-TOTAL SUSPENDED SOLIDS
 TURB-TURBIDITY
 SD=SECCHI DISC METERS
 WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03130004 CHATTAUOCHEE RIVER

'X' = DEGRADING TREND

'0' = STABLE TREND

'+' = IMPROVING TREND

'-' = MISSING DATA

1984 - 1993 TRENDS

WATERBODY NAME	WATERBODY TYPE:	QUALITY RANK OVER- ALL	1984 - 1993 TRENDS											
			T	T	C	S	P	A	B	D	D	F	F	
1 Thompson Pond	Lake	POOR	X	X	X	X	X	X	X	X	X	X	X	
2 Pond Drain	Lake	GOOD	0	0	0	0	0	0	0	0	0	0	0	
3 Lake Seminole	Lake	PARTIAL	+	+	+	+	+	+	+	+	+	+	+	
4 Chattahoochee River	Stream	FAIR	-	-	-	-	-	-	-	-	-	-	-	

* WATER BODY TYPE: LAKE

1 Thompson Pond

2 Pond Drain

3 Lake Seminole

4 Chattahoochee River

WATER BODY TYPE: STREAM	MEETS USE?	POOR	GOOD	FAIR	PARTIAL	GOOD	POOR	GOOD	FAIR	PARTIAL	GOOD	POOR	GOOD
1 Thompson Pond	NO	X	0	0	+	0	0	0	0	0	0	0	0
2 Pond Drain	YES	0	0	0	+	0	0	0	0	0	0	0	0
3 Lake Seminole	?	0	0	0	+	0	0	0	0	0	0	0	0
4 Chattahoochee River	?	0	0	0	+	0	0	0	0	0	0	0	0

W=OVERALL RANK
OVER-10 or S
N P H D H L U S O O C C B L
I L K R S D C I S O O M O
A B A L L P W
T I I
DGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

TCOLI-TOTAL COLIFORM	TURB-TURBIDITY
FCOL-FEICAL COLIFORM	TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
FLOW FLOW	WN-WATER QUALITY INDEX FOR STREAMS AND SPRINGS
MEETS USE-MEETS DESIGNATED USE	WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS
PH-PH	TOC-T-ORGANIC CARBON
SD-SDRECHI DISC METERS	TP-PHOSPHOUS
	TSS-TOTAL SUSPENDED SOLIDS

LEGEND:

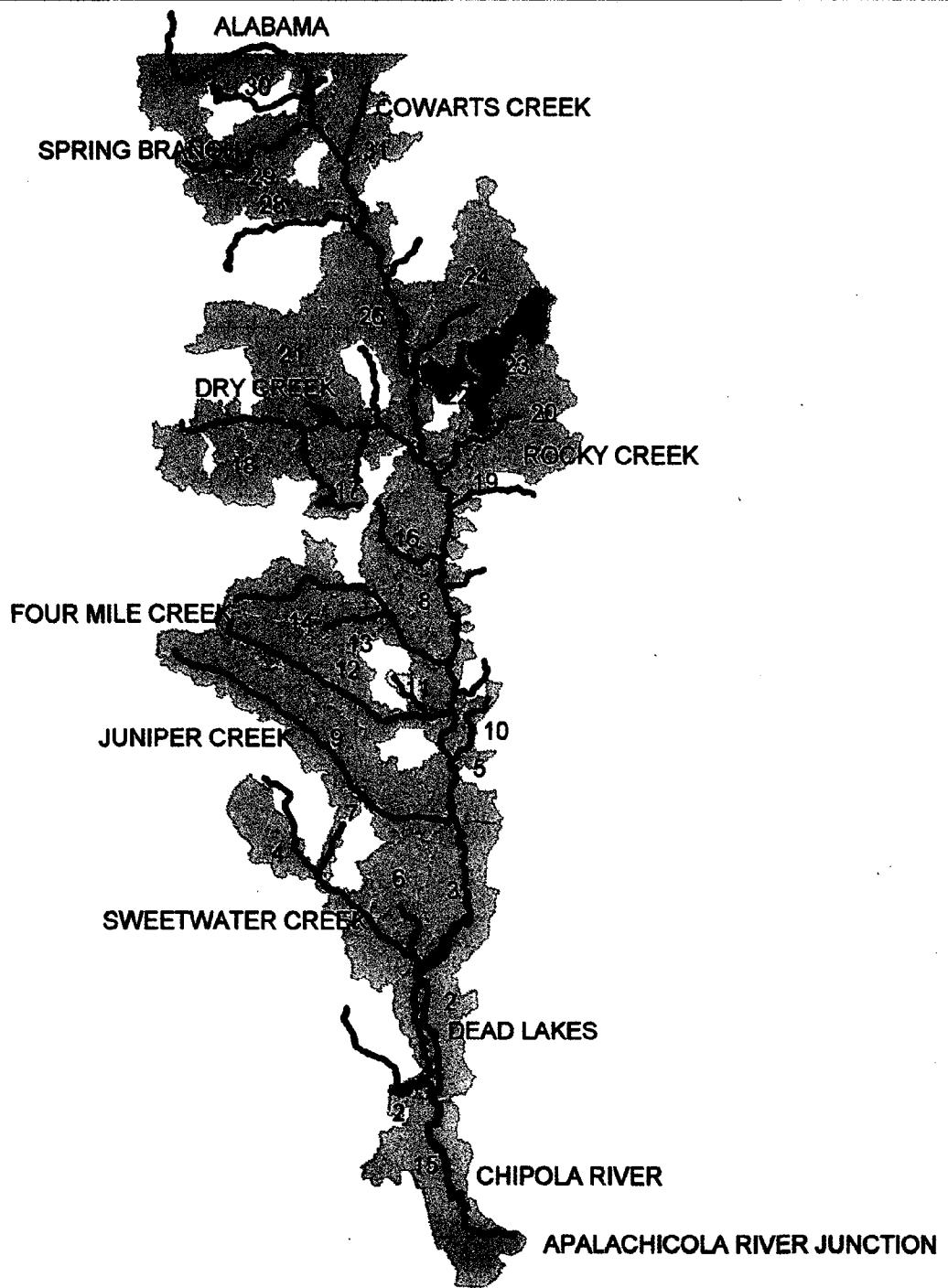
ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN

DOSAT-DO SATURATION
FCOL-FEICAL COLIFORM
FLOW FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SDRECHI DISC METERS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAP ID INDICATES NO STOREY INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE.

CATNAME=CHATTahoochee RIVER HHC=03138004

M	A	W	B	P	I	T	D	N
B	A	Q	3	0	5	S		
S	T	N	P	N	E	R	T	R
I	I	0	N	N	E	R	T	T
D	N	5	T	T	M	I	E	C
1	272	THOMPSON POND	POOR	THREAT	X	X	X	X
2	170	POND DRAIN	GOOD	THREAT	X	X	X	X
3	60	Lake Seminole	FAIR	THREAT	X	X	X	X
4	60A	Chattahooches River	GOOD	THREAT	X	X	X	X
5*	85	BRENSON FOND OUTLET		THREAT	X	X	X	X
6*	85A	Irwin Mill Creek		THREAT	X	X	X	X



CHIPOLA RIVER BASIN
03130012

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



CHIPOLA RIVER BASIN

Basic Facts

Drainage Area: 1,025 square miles (about 85% in Florida)

Major Land Uses: silviculture, agriculture, rangeland

Population Density: low (Wewahitchka, Marianna)

Major Pollution Sources: Marianna WWTP, cattle access to river, farm runoff

Best Water Quality Areas: most of basin

Worst Water Quality Areas: Otter Creek

Water Quality Trends: stable quality at eight sites

OFW Waterbodies: Chipola River

SWIM Waterbodies: part of Apalachicola River and Bay SWIM watershed

Reference Reports:

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Apalachicola SWIM plan

Basin Water Quality Experts:

Gray Bass, FGFWFC, 904/957-4172

Homer Royals, FGFWFC, 904/357-6631

Don Ray, DEP (Pensacola), 904/444-8300

Glenn Butts, DEP (Pensacola), 904-444-8380

In the News

* Dead Lakes dam removed in 1988.

* Stone Container Corporation clear-cut bottomland hardwood forests causing turbidity violations in Marshall and Cowarts Creeks. A Consent Order was signed with an \$11,000 settlement.

Ecological Characterization

The Chipola River is one of Florida's most unusual and diverse waterways and has an Outstanding Florida Water designation. From its spring-fed sources in southern Alabama,

it flows about 110 miles and is the major tributary of the Apalachicola River. The drainage basin is about 1,025 square miles, and the average flow is 1,500 cfs.

The river originates in the Marianna Highlands from several springs and the confluence of Marshall and Cowarts Creeks. Typical of many spring-fed rivers, it carries a small sediment load, is low in color, and has a relatively steady flow. The upper portion of the basin has a diverse terrain with bluffs, sand hills, swamps, sinks, and both terrestrial and underwater caves. The river goes underground for a short distance near Marianna.

Several spring-runs and some surface drainage tributaries join the Chipola after it emerges. However, several miles below Fourmile Creek the river flows out of the limestone highlands and empties into a low swampy area. Here, the tributary inflow is mostly blackwater.

Old levees of the Apalachicola River naturally impound the lower Chipola forming Dead Lake. A dam built in the 1960s to enhance the natural impoundment was recently removed. At the lower end of the lake, the U.S. Army Corps of Engineers maintains the Chipola Cut-off, a once natural diversion, that now captures about one-fourth of the Apalachicola River's flow. From here, the two rivers follow a roughly parallel course until they meet about eight map-miles downstream.

Exceptional water quality and habitat diversity support rich wildlife communities. The river is heavily used for canoeing, boating, tubing and fishing. There are several recreation areas and fish camps.

There are only two urban areas in the basin (Marianna and Wewahitchka), both small. However, because most of the basin lies in the highland area, there is more intensive land use than the more typical swampland drainage of North Florida rivers. The upper basin has agricultural rangeland and silviculture areas. The lower basin is mostly wetlands and silviculture.

Anthropogenic Impacts

Water quality in the Chipola River basin generally appears to be good; however, only about one-half of the stream reach mileage has been sampled for water quality. A Basin Assessment of the Chipola River was performed by Northwest District DEP, and two WLA studies of point sources have been performed. The upper reaches have some localized areas of relatively high nitrates, BOD and siltation predominantly from agricultural and silviculture nonpoint sources, but the river retains its "good" WQI rating. The river tends to have relatively high levels of nitrogen compared to surrounding waterbodies, but low phosphorus levels. A recent algal assay also indicates the river is severely phosphorus limited. Any increase in phosphorus loading could greatly enhance algal growth of the river and downstream lake.

The middle reaches have several small WWTPs. The basin assessment found high coliform counts below the Marianna WWTP, and reported a trend of increasing nitrate levels in the river over the last ten years. These reaches also have seasonally high nutrient and chlorophyll values, and are considered to have fair to good water quality. The Basin Assessment also indicates there have been aquatic weed and eutrophication problems in Dead Lake due to agricultural runoff. Macroinvertebrate diversity is reported to be seasonally low downstream of the lake. The Dead Lake dam has recently been opened to allow natural stream flow. The water level of Dead Lake naturally fluctuates depending on flow in the Apalachicola River. The river water level has been high since the removal of the dam, so little difference in the lake levels has been noted. It is not certain how the change will affect the lower Chipola and Apalachicola Rivers. The Dry Creek area has heavy metal contamination from a battery salvage operation. This contamination is now being cleaned up through the use of Federal funds. The Basin Assessment also found high mercury levels below Marianna.

Fifth year bioassessments for Arrowhead Campground WWTP and City of Marianna WWTP are scheduled for September and November 1994. The Holiday Inn of Marianna WWTP, traditionally a problem source, has been connected to the City WWTP.

The Spring Creek (watershed #27, south of Campbellton) stream channel was moved and culverted (habitat destruction) along with other dredge and fill impacts from construction on US Highway 231.

Bridge Creek at SR 71 within a mile of I-10 had to be abandoned as an ecoregion monitoring site because of clear cutting of the stream side climax forest and a newly permitted industrial site on the north bank.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03130012 CHIPOLA RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN				PH ALKALINITY				TROPHIC STATUS				BIOLOGICAL DIVERSITY				WATER QUALITY INDICES			
		#OBS	MAX YR	BEG YR	END YR	PERIOD	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO PHOS	CHLA	TOTAL FEL	NAT ART	BECK COND	COND FLOW	COLIFORM	COND	FLOW	WQI	TSI		
*	WATER BODY TYPE: LAKE																												
1	MERRITT'S MILL POND	44	91	93	Current	1.0	1.0	3	3	11.7	11.8	-	-	1	7.9	100	1.84	0.02	0	-	12	-	-	-	223	-	-	38	
2	CHIPOLA RIVER	75	89	93	Current	14.5	0.9	40	2	7.0	81	-	-	5	6.6	56	0.40	0.04	-	-	13	-	-	-	123	-	-	58	
27	MUDY BRANCH	3	93	93	Current	.	.	.	-	140.0	-	-	-	7.3	-	205.630.50	-	10000	-	-	-	-	-	-	2320	-	-	100	
*	WATER BODY TYPE: STREAM																												
3	CHIPOLA RIVER	18	89	93	Current	12.5	1.0	25	1	8.4	90	-	-	1	6.7	77	0.88	0.04	-	-	-	-	-	-	-	165	-	43	
4	SWEETWATER CREEK	5	92	92	Current	2.0	1.0	3	3	7.4	81	-	-	2	7.2	82	1.03	0.01	-	-	1	-	-	-	21	-	-	5	
5	CHIPOLA RIVER	13	92	93	Current	3.7	0.8	20	3	8.4	81	-	-	2	4.8	9	0.47	0.03	-	-	-	-	-	-	-	194	-	23	
6	CROOKED CREEK	18	89	93	Current	12.0	1.6	18	1	6.8	75	-	-	3	6.2	94	1.15	0.01	-	-	-	-	-	-	-	52	-	33	
7	CLEARWATER BRANCH	6	92	93	Current	1.6	0.4	18	1	7.2	75	-	-	3	6.2	94	1.05	0.03	-	-	-	-	-	-	-	19	-	15	
8	CHIPOLA RIVER	54	89	93	Current	4.2	1.4	23	8	7.6	85	0.5	-	6	7.6	94	1.05	0.03	-	-	-	-	-	-	-	925	88	32	
9	JUNIPER CREEK	4	92	92	Current	1.7	0.8	50	1	8.0	85	-	-	3	6.2	94	1.16	0.02	-	-	-	-	-	-	-	26	-	11	
10	WILDCAT CREEK	6	93	93	Current	2.5	0.4	50	1	7.8	86	-	-	5	5.0	1	0.78	0.01	-	-	-	-	-	-	-	255	-	24	
11	OTTER CREEK	8	93	93	Current	4.3	0.4	70	4	7.0	79	-	-	9	6.0	2	1.25	0.20	-	-	-	-	-	-	-	7100	-	35	
12	FOUR MILE CREEK	5	92	92	Current	2.6	0.7	40	2	8.7	93	-	-	3	5.8	1	0.23	0.01	-	-	-	-	-	-	-	60	-	16	
13	WHITEWATER CREEK	7	93	93	Current	3.4	0.5	60	2	7.6	86	-	-	5	5.1	1	0.42	0.01	-	-	-	-	-	-	-	310	-	24	
14	TENNIE CREEK	6	92	92	Current	2.9	0.4	100	2	8.0	86	-	-	6	5.1	1	0.45	0.02	-	-	-	-	-	-	-	154	-	23	
15	PUMPKIN CREEK	2	84	84	Historical	15.0	0.8	50	6	11.7	93	0.9	-	17.6	35	0.83	0.03	2	-	-	-	-	-	-	-	93	-	27	
16	RUSS MILL CREEK	6	92	92	Current	3.0	0.5	60	1	7.6	80	-	-	6	5.0	1	0.20	0.02	-	-	-	-	-	-	-	106	-	20	
17	FORGEY MILL CREEK	5	92	92	Current	1.5	0.8	120	1	8.2	82	-	-	9	5.0	1	0.37	0.02	-	-	-	-	-	-	-	4.8	-	20	
18	SHOES MILL CREEK	3	80	80	Historical	4.6	0.6	0	-	-	-	-	-	6	3	5	0.17	0.01	1	-	-	-	-	-	-	25	-	3	
19	SINK CREEK	5	93	93	Current	4.5	0.6	60	3	7.5	81	-	-	7	7.2	56	0.65	0.01	-	-	-	-	-	-	-	252	-	30	
20	ROCKY CREEK	4	92	92	Current	4.6	0.8	15	3	7.9	88	-	-	2	7.0	91	1.33	0.02	-	-	-	-	-	-	-	270	-	30	
21	DRY CREEK	8	92	92	Current	8.4	0.7	115	3	6.0	62	0.6	-	11	6.7	1	0.58	0.02	-	-	-	-	-	-	-	250	763	62	
24	SPRING CREEK	3	92	92	Current	3.0	-	5	3	6.1	93	0.2	-	2	6.1	2	2.02	0.02	-	-	-	-	-	-	-	70	8	17	
25	HISTORICAL	24	87	87	Historical	20	5	37	5.0	-	-	-	-	6	4.4	1	2.17	0.82	-	-	-	-	-	-	-	120	-	79	
26	CHIPOLA RIVER	37	89	93	Current	4.1	1.0	25	5	6.9	74	0.5	-	3	7.6	91	1.36	0.02	-	-	-	-	-	-	-	1355	123	28	
28	WADDLE'S MILL CREEK	4	92	92	Current	9.5	0.3	55	5	5.2	55	0.3	-	5	7.6	90	0.03	-	-	-	-	-	-	-	2000	1515	218		
29	SPRING BRANCH	2	92	92	Current	6.5	0.3	65	4	6.9	77	-	-	5	7.0	69	0.55	0.02	-	-	-	-	-	-	-	75	-	27	
30	Marshall Creek	9	89	92	Current	8.0	0.5	45	9	6.8	73	0.3	-	6	7.6	90	0.70	0.03	-	-	-	-	-	-	-	1040	190	33	
31	COWARD'S CREEK	15	89	92	Current	8.0	1.2	30	6	7.0	76	0.2	-	4	7.6	93	1.52	0.02	-	-	-	-	-	-	-	1100	215	36	

LEGEND:
 BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
 CHL-A-CHLOROPHYLL UG/L
 ART-ARTIFICIAL SUBSTRATE DI
 COD-CHEMICAL OXYGEN DEMAND MG/L
 BEG-YEAR-BEGINNING SAMPLING YEAR
 COLOR-COLOR PCU
 BECK-BECK'S BIOCITIC INDEX
 DISC-DISC METERS SD-SECCHI
 END-YR-ENDING YEAR
 FEC-FECAL COLIFORM MPN/100ML PH-PH STANDARD UNITS
 FLOW-FLOW CFSS
 MAX #OBS-MAXIMUM NUMBER OF SAMPLES
 NAT-NATURAL SUBSTRATE DIVERSITY
 NITRO-TOTAL NITROGEN MG/L
 TOC-TOTAL ORGANIC CARBON MG/L
 TSS-TOTAL SUSPENDED SOLIDS MG/L
 TSI-TROPIC STATE INDEX
 TURB-TURBIDITY MG/L
 WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03130012 CHIPOLA RIVER

x = DEGRADING TREND

0 = STABLE TREND

+ = IMPROVING TREND

- = MISSING DATA

1984 - 1993 TRENDS

|-----|

|W|

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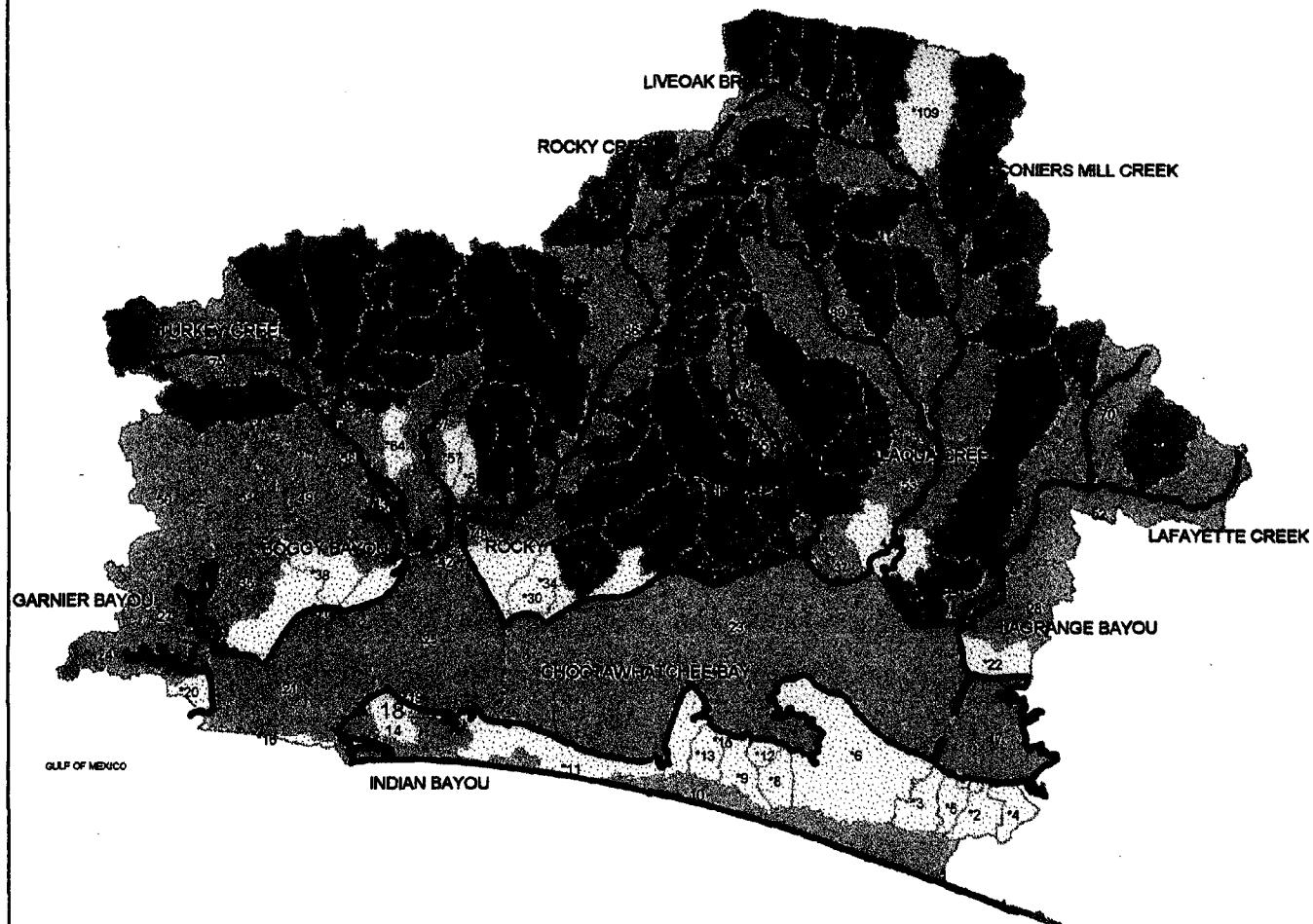
|O|

|M|

NPS QUALITATIVE SURVEY RESULTS
 AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
 THE * ON MAP INDICATES NO STORED INFORMATION AVAILABLE FOR THIS WATERSHED
 SEE PAGE 11 FOR LEGEND FOR THIS TABLE.

CATNAME=CHIPOLA RIVER HUC=031300012

M	A	P	T	D	W	Q	3	0	S	I	E	O	F	T	F	O
	B	A	R	T	W	Q	3	0	U	A	E	T	T	T	U	I
	S	B	I	E	E	R	N	P	B	E	E	H	S	S	N	T
	I	I	E	E	E	R	N	N	I	R	B	A	R	I	U	C
	N	D	I	I	I	E	N	I	N	I	C	R	G	I	D	H
1	180A															
	51A	MERRITTS MILL POND	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X
	51B	CHIPOLA RIVER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X
	51C	CHIPOLA RIVER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X
	51D	CHIPOLA RIVER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X
	51	CHIPOLA RIVER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X
	20	309	ROCKY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	21	279	DRY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	22*	320	BRIDGE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	23*	267	LITTLE ROCKY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	24	180	SPRING CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	26	51B	CHIPOLA RIVER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	28	174	WADDLE'S MILL CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X
	31	52	COWARTS CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X



CHOCTAWHATCHEE BAY BASIN
03140102

**AVERAGE WATER QUALITY
1984-1993 STORET DATA**
WATERSHED ID NUMBERS LINK MAP TO TABLES
*** INDICATES QUALITATIVE ASSESSMENT**

WATER QUALITY

██████	GOOD
████	THREATENED
███	FAIR
██	POOR
	UNKNOWN



CHOCTAWHATCHEE BAY BASIN

Basic Facts

Drainage Area: 699 square miles

Major Land Uses: silviculture, urban development

Population Density: concentrated in 2 urban areas (Ft. Walton Beach, Destin)

Major Pollution Sources: urban and WWTP sprayfield runoff

Best Water Quality Areas: most of the basin

Worst Water Quality Areas: Joe's BAYOU

Water Quality Trends: stable quality at 1 site, Magnolia Creek improving

OFW Waterbodies: Basin Bayou State Recreation Area

SWIM Waterbodies: none

Reference Reports:

Choctawhatchee Bay Report, Livingston, NFWFMD, 1988

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

David Heil, DEP (Tallahassee), 904/488-5471

Don Ray, DEP (Pensacola), 904/444-8300

Glenn Butts, DEP (Pensacola), 904-444-8380

Ecological Characterization

Choctawhatchee Bay basin encompasses 699 square miles with the bay itself covering 129 square miles. The bay has little communication with the Gulf of Mexico, with only one inlet, East Pass, on the western end of the bay. Freshwater inputs are the Choctawhatchee River, at 7,000 cfs, entering at the easternmost end of the bay, and several small creeks entering the bayous along the northern shore of the bay.

Development along the north and west is sparse, with Eglin Air Force Base occupying most of the northern drainage. The City of Ft. Walton Beach is on the eastern shore, and Destin is situated at East Pass. Residential, hotel and condominium development is occurring rapidly all along the peninsula that forms the southern boundary of the bay. An endangered fish species, the Okaloosa Darter, is found in the streams draining into Boggy and Rocky Bayous.

Anthropogenic Impacts

Historically water quality in this basin has been good. However, there have been several problem areas associated with rapid development occurring along the coast. In the 1970s,

treated wastewater effluents caused eutrophication, fish kills and grass bed die-offs in portions of the bay. The WWTPs have since been converted to spray irrigation discharge.

A basin assessment conducted by the DEP Northwest District in 1984 indicated that water quality did improve once the WWTPs were upgraded.

Recently, however, water quality in the bay is again being degraded due to the continuing development of the watershed area. The nonpoint pollution sources associated with this development include highway runoff, ditching and draining of wetlands and surficial water table seepage from package plant perc-ponds and WWTP sprayfields. In particular, the poorly circulating water of Old Pass Lagoon at Destin, Florida has shown high levels of eutrophication and fish kills in the past. Local education programs and ordinances along with increased emphasis on stormwater treatment appear to be reversing the pollution trend. Fish kills have not been reported in recent years. A Gulf-to-Lagoon pipeline and pump has been partially constructed by the Northwest Florida Water Management District to facilitate lagoon flushing. In April 1994, Dissolved oxygen violations were found during flush pump operations in Old Pass Lagoon (Destin Harbor) and Holiday Isle canals. Several bayous that discharge into the Bay have had and continue to have water quality problems. Also, Dons Bayou near Ft. Walton has experienced a low grade, chronic fish kill from unknown sources. Recent studies indicate localized metals contamination in sediments near urban areas. The NOAA National Status and Trends Program, which monitors trends of chemical contamination, found high concentrations of lead, silver, DDT, chlordane, PCB, and polycyclic aromatic hydrocarbons in sediment at Shirk Point, near the mouth of Boggy Bayou. Fish kills have also been reported in Jose Bayou in Destin, Jolly Bay at Black Creek and in LaGrange Bayou. The latter has a small shipyard located near Freeport.

Another major area of concern for the basin was a proposed bridge from White Point across the bay to Piney Point which had been permitted. Potential sources of ecological damage include: destruction of grass beds, decreased circulation of bay waters, destruction of wetlands from Piney Point to the connecting highway, and construction associated turbidity. The bridge will also promote even faster growth in the area, further stressing the existing infrastructure.

An existing bridge across the bay is in service however, mitigation of seagrass nursery beds destroyed during construction has not yet succeeded.

Commercial fisherman report crab kills in the vicinity of Peach Creek at the mouth of the Intracoastal Waterway. Monitoring found low dissolved oxygen concentrations in Peach Creek and the stream had been historically channelized in a mistaken attempt at mosquito control. A new WWTP (Point Washington WWTP) near Peach Creek has been permitted for construction because of the area's increased development.

Turkey Creek below Niceville WWTP sprayfield had it's total nitrogen increased from ≤ 0.1 mg/l upstream to $\geq 2-4$ mg/l downstream.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140102 CHOCTAWHATCHEE BAY

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN				PH ALKALINITY				BIOLOGICAL DIVERSITY				WATER QUALITY INDICES											
		BEG	END	DATA	PERIOD	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL FECAL	ART	BECK	COND	FLOW	WQI	TSI								
* WATER BODY TYPE: ESTUARY																																	
14	INDIAN BAYOU	5	85	85	Historical	3.7	1.0	3.3	9	6.0	65	2.6	-	4	7.5	0.48	0.06	12	-	-	-	-	-	27375	-	47							
17	CHOCTAWHATCHEE BAY AB C	50	92	93	Current	7.0	1	30	8	7.7	85	2.6	-	1	8.0	0.70	0.01	3	1.03	0.20	9	1200	100	-	21288	-	38						
18	JONES BAYOU	2	87	87	Historical	5.5	1.5	10	8	8.7	94	0.9	-	1	7.9	0.37	0.01	2	41	7	-	-	-	-	-	-	-	52					
21	CHOCTAWHATCHEE BAY AB C	83	71	87	Historical	1.3	1.4	20	4	6.6	74	0.8	-	3	8.0	0.81	0.01	6	3	5	-	-	-	-	-	-	27150	-	30				
23	CHOCTAWHATCHEE BAY AB C	70	72	82	Historical	6.5	-	6	9.0	98	1.0	-	1	8.0	0.78	0.01	3	33	5	-	-	-	-	-	-	-	36000	-	35				
24	CINCO BAYOU	34	70	73	Historical	2.0	2.2	15	13	8.2	90	0.2	-	3	7.6	0.34	0.02	3	5	5	-	-	-	-	-	-	28000	-	25				
25	CHOCTAWHATCHEE BAY AB C	21	89	93	Current	1.6	1.7	15	14	6.7	74	1.5	-	4	6.6	3.2	0.63	0.01	4	200	40	-	-	-	-	-	-	25700	-	36			
27	GARNET BAYOU	8	92	92	Current	5.0	-	9	10.8	113	1.5	-	1	8.0	0.57	0.08	0.01	4	97	-	-	-	-	-	-	-	21535	-	37				
35	POOCO BAYOU	9	72	72	Historical	4.7	0.8	50	18	7.3	87	-	-	5	7.0	0.33	0.01	5	300	20	-	-	-	-	-	-	10200	-	12				
37	ALAGA CREEK OUTLET	7	92	92	Current	10.0	0.6	60	19	6.6	72	-	-	6	6.7	1.7	0.38	0.01	8	780	100	-	-	-	-	-	-	6500	-	46			
41	ALAGA BAYOU	8	92	92	Current	1.6	1.2	20	9	6.7	78	-	-	4	6.5	2.6	0.49	0.01	3	100	4	-	-	-	-	-	-	23475	-	50			
43	BOGIE BAYOU	8	92	92	Current	2.8	0.8	70	8	7.2	79	-	-	5	6.2	8	0.29	0.01	4	900	160	-	-	-	-	-	-	1700	-	38			
44	BASIN BAYOU	7	92	92	Current	2.4	0.8	40	6	6.7	83	-	-	4	6.6	11	0.28	0.01	2	500	120	-	-	-	-	-	-	7272	-	45			
48	ROCKY BAYOU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42						
* WATER BODY TYPE: LAKE																																	
10	LAKES OYSTER	3	80	80	Historical	0.7	200	*	*	*	*	*	*	*	6.4	15	0.58	0.03	4	*	*	*	*	*	2200	*	51						
* WATER BODY TYPE: STREAM																																	
28	LAFRANGE BAYOU	12	92	93	Current	5.0	0.9	50	10	5.4	58	-	-	6	7.1	4.6	0.52	0.01	5	103	-	-	-	-	-	-	18900	-	33				
49	TOMS CREEK	13	72	74	Historical	10.0	-	10	7	9.0	85	0.4	-	2	6.9	5	0.16	0.02	1	340	45	-	-	-	-	-	-	34	35	23			
50	LIGHTWOOD KNOT CREEK	38	72	79	Historical	8.3	-	23	10.2	94	0.4	1	5.6	24	0.38	0.01	1	487	-	-	-	-	-	-	-	20	57	10					
51	GARNET CREEK	32	78	79	Historical	1.0	1	30	8.0	79	0.5	3	0	5.6	5	0.60	0.01	1	1000	200	-	-	-	-	-	-	27	24	10				
52	LEFAVETTE CREEK	10	92	92	Current	3.2	1.5	50	2	7.3	82	-	-	5	5.1	2	0.52	0.01	1	1000	200	-	-	-	-	-	-	38	36	24			
53	ALAGA CREEK	8	92	93	Current	4.0	1.4	35	2	7.8	83	-	-	3	6.0	1	0.15	0.01	1	85	-	-	-	-	-	-	370	20	20				
58	TURKEY CREEK	3	78	78	Historical	2.5	-	30	7.9	82	0.6	10	5	4.8	1	0.20	0.01	2	420	84	-	-	-	-	-	-	15	390	10				
67	SHIRT CREEK	5	92	92	Current	1.5	0.8	20	1	7.7	94	-	-	2	6.0	2	0.25	0.02	1	21	-	-	-	-	-	-	21	-	16				
68	UNIFER CREEK	7	92	92	Current	2.0	1.0	18	1	6.9	87	-	-	1	6.0	1	0.16	0.02	1	250	86	-	-	-	-	-	-	12	-	13			
70	MAGNOLIA CREEK	8	89	91	Current	2.2	0.4	48	7.7	90	-	-	5	5.7	0.38	0.01	1	500	120	-	-	-	-	-	-	33	37	11					
74	WATERING CREEK	5	92	92	Current	8.0	0.9	50	7	7.9	89	-	-	5	6.1	1	0.14	0.01	1	500	120	-	-	-	-	-	-	18	-	17			
75	ALAGA CREEK	7	92	92	Current	6	92	92	1.1	1.2	10	1	6.9	94	-	-	3	5.6	1	0.17	0.01	1	900	255	-	-	-	-	-	-	18	-	34
79	TURKEY CREEK	5	92	92	Current	4.9	0.9	50	1	7.7	86	-	-	1	6.2	1	0.22	0.01	1	153	68	-	-	-	-	-	-	12	-	11			
86	ROCKY CREEK	5	92	92	Current	2.8	0.6	50	2	7.9	86	-	-	3	5.5	2	0.14	0.01	1	800	300	-	-	-	-	-	-	13	-	23			
89	LITTLE ALAGA CREEK	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5.7	1	0.16	0.01	1	1300	700	-	-	-	-	-	-	14	-	22		

LEGEND:
 ALK-ALKALINITY MG/L
 DO-DISSOLVED OXYGEN MG/L
 CHL-A-CHLOROPHYLL U/L
 COD-CHEMICAL OXYGEN DEMAND MG/L
 REG-Y-BEGINNING SAMPLING YEAR COLOR-COLOR PCU
 BECK-BECK'S BIOLOGIC INDEX
 COND-CONDUTIVITY UMMOS

MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TUB-TUBIDITY MG/L
 MAX-NATURAL SUBSTRATE DIVERSITY WQI-WATER QUALITY INDEX
 END-YR-ENDING YEAR NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL ORGANIC CARBON MG/L
 FEC-FECAL COLIFORM MPN/100ML PH-PH STANDARD UNITS TSI-TROPIC STATE INDEX
 FLOW-FLOW CPS TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

X=EXCEEDS SCREENING CRITERIA
0=WITHIN SCREENING CRITERIA
..=MISSING DATA

** USGS HYDROLOGIC UNIT: 03140102 CHOCTAWHATCHEE BAY

SCREENING VARIABLES AND CRITERIA

WATERSHED ID NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTI	BIOLOGICAL DIVERSITY	CHLA	SECCHE DISC
			TN>2.0	TP>.46	TP>.12	PH>8.8 PH<5.2	ALK<>20	TURB>16.5 (COND>1275)	TURB>18 (COND>3.3 TOD>102)	DO<4	BOD>3.3 (COD>102 TOC>27.5)	DO>4.0 (IDNAT<1.5 FECAL>4.0 BECK<5.5)	CHLA>40 (IDNAT<1.5 TOD>3700)	CHLA>40 (IDNAT<1.5 TOD>3700)
* WATER BODY TYPE: ESTUARY														
14 INDIAN BAYOU	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
17 CHOCTAWHATCHEE BAY AB C	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
18 JOES BAYOU	FAIR	Historical	0	0	x	0	0	0	0	0	0	0	0	0
21 CHOCTAWHATCHEE BAY AB C	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
23 CHOCTAWHATCHEE BAY AB C	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
24 CINCO BAYOU	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
25 CHOCTAWHATCHEE BAY AB C	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
27 GARNIER BAYOU	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
35 POQUITO BAYOU	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
37 ALAGUA CREEK OUTLET	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
41 ALAGUA BAYOU	FAIR	Current	0	0	0	0	0	0	0	0	0	0	x	0
43 BOGGY BAYOU	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
44 BASTIN BAYOU	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
48 ROCKY BAYOU	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
* WATER BODY TYPE: LAKE														
10 LAKE OYSTER	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
* WATER BODY TYPE: STREAM														
28 LAGRANGE BAYOU	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
49 TONS CREEK	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
50 LIGHTWOOD KNOT CREEK	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
51 GARNET CREEK	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
52 LAFAYETTE CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
53 ALAGUA CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
58 TURKEY CREEK	GOOD	Historical	0	0	0	0	0	0	0	0	0	0	0	0
67 SWIFT CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
68 JUNIPER CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
70 MAGNOLIA CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
74 WATERING CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	x	0
75 ALAGUA CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	x	0
79 TURKEY CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
86 ROCKY CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	0
89 LITTLE ALAGUA CREEK	GOOD	Current	0	0	0	0	0	0	0	0	0	0	0	x

LEGEND:
 COND=CONDUCTIVITY
 DO=DISSOLVED OXYGEN
 ALK=ALKALINITY
 BECK-BECK'S BIOTIC INDEX
 BIOT DIV-BIODIVERSITY
 CHLA-CHLOROPHYLL
 X=EXCEEDS SCREENING CRITERIA
 0=WITHIN SCREENING CRITERIA
 ..=MISSING DATA
 TP=TOTAL COLIFORM BACTERIA
 HISTORICAL=1970 TO 1988
 OXYGEN DEMAND=BOD, COD, TOC
 PH-PH
 TSS-TOTAL SUSPENDED SOLIDS
 DIAT=ARTIFICIAL SUBSTRATE DIVERSITY
 DINAT=NATURAL SUBSTRATE DIVERSITY
 TURB=TURBIDITY
 TN-NITROGEN
 SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT

** USGS HYDROLOGIC UNIT: 03140102 CHOCTAWHATCHES BAY

TRENDS-SOURCES-CLEANUP		1984 - 1993 TRENDS											
		PLEASE READ THESE COLUMNS VERTICALLY											
		QUALITY RANK		OVER-ALL TENDENCY		WATER USE?		MEETS DESIGNATED USE		WATER USE?		MEETS DESIGNATED USE	
WATERSHED ID	NAME	W	T	T	C	S	P	A	T	B	D	F	T
14	INDIAN BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
17	CHOCTAWHATCHES BAY AB C	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
18	JOES BAYOU	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
21	CHOCTAWHATCHES BAY AB C	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
23	CHOCTAWHATCHES BAY AB C	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
24	CINCO BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
25	CHOCTAWHATCHES BAY AB C	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
27	GARNIER BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
35	POQUITO BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
37	ALACUA CREEK OUTLET	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
41	ALACUA BAYOU	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
43	BOGGY BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
44	BASIN BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
48	ROCKY BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
10	LAKE OISTER	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
* WATER BODY TYPE: STREAM		DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS											
28	JAGRANCE BAYOU	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
49	TOMS CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
50	LIGHTWOOD KNOT CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
51	GARNIER CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
52	LAFAYETTE CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
53	ALACUA CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
58	TURKEY CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
67	SWIFT CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
68	JUNIPER CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
70	MAGNOLIA CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
74	WATERING CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
75	ALACUA CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
79	TURKEY CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
96	ROCKY CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
39	LITTLE ALACUA CREEK	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD

LEGEND:	DOSAT-DO SATURATION FCOL-FEICAL COLIFORM FLOW-FLOW	TCOL-TOTAL COLIFORM TEMP-TEMPERATURE TN-NITROGEN
ALK-ALKALINITY BED-BEDDEN, OXYGEN DEMAND CHLA-CHLOROPHYLL DO-DISSOLVED OXYGEN	MEETS USE-MEETS DESIGNATED USE PH-PH SD-SECCHI DISC METERS	TOC-T-ORGANIC CARBON TP-TP-PHOSPHORUS TSS-TOTAL SUSPENDED SOLIDS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAP INDICATES NO STORE INFORMATION AVAILABLE FOR THIS WATERSHED

CATNAME=CHOCTAWHATCHEE BAY HUC=03140102

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE + ON MAP ID INDICATES NO STORED INFORMATION AVAILABLE FOR THIS WATERSHED
- SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

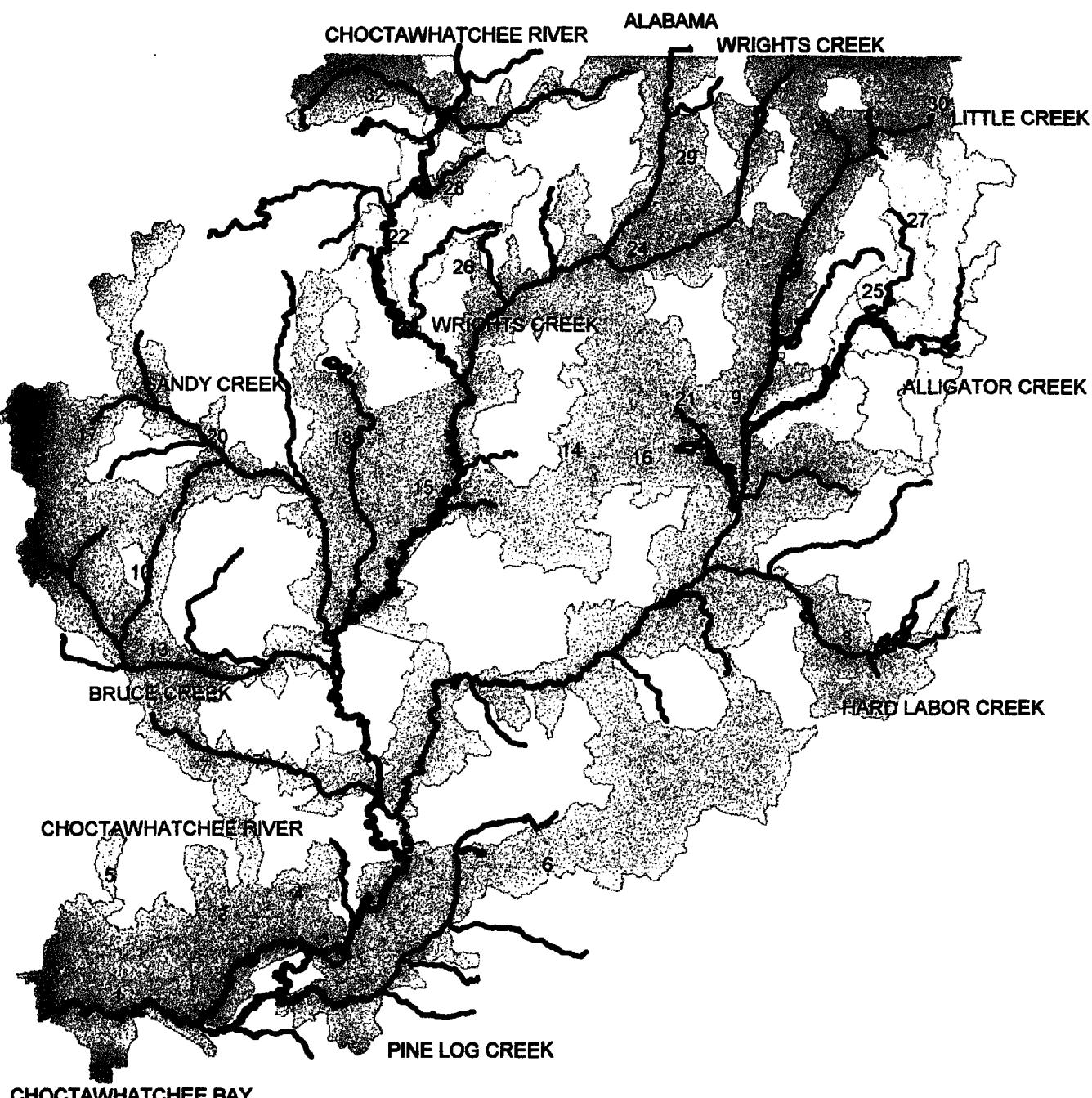
CATNAMS-CHOCTAWHATCHEE BAY HUC-03140102

(continued)

M	A	B	S	P	O	S	T	I	F	O	T	U	S	N	H	O	E	D	R	N	M	P
W	A	W	W	W	W	A	H	T	T	T	F	F	I	I	N	N	H	O	O	E	D	R
B	S	Q	Q	Q	Q	D	O	L	H	S	X	X	I	I	S	S	H	O	O	E	D	R
I	T	3	3	3	3	H	E	E	E	H	A	A	E	E	I	I	S	S	H	O	E	D
D	N	0	0	0	0	R	T	T	R	K	L	W	I	I	T	T	L	M	P	I	E	D
51	655	GARNIER CREEK	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
52	616	LAFFAYETTE CREEK	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
53	351A	ALAQUA CREEK	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
54*	673	SANDERS BRANCH	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
55*	594	BASIN CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
56*	664	LONG CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
57*	658	SHAW STILL BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
58	495A	TURKEY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
59*	567	FOURMILE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
60*	615	HICKORY BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
61*	590	LITTLE BASIN CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
62*	622	BEE BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
63*	620	TURKEY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
64*	614	MILL CREEK	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
65*	612	LONG CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
66*	621	WOLF CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
67	568	SWIFT CREEK	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
68	468A	JUNIPER CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
69*	580	MIDDLE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
70	557	MAGNOLIA CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
71*	619	ANDERSON BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
72*	606	SCHOOLHOUSE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
73*	587	ROGUE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
74	520	WATERING CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
75	351	ALAQUA CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
76*	514	BEAR BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
77*	573	LONG BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
78*	544	WHITE BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
79	495	TURKEY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
80*	515	NINETEEN MILE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
81*	532	BULLY HORSELOT BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
82*	491	ALICE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
83*	476	LITTLE ROCKY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
84*	507	PAINTER HEAD CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
85*	471	TENNILLE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
86	361	ROCKY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
87*	468	ANDERSON BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
88*	463	MIDDLE ROCKY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
89	432	LITTLE ALAQUA CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
90*	472	PARISH CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
91*	492	PINELOG CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
92*	500	MATTRESS HEAD BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
93*	470	BLOUNT MILL CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
94*	478	DAVIS BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
95*	448	EAST ROCKY CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
96*	445	OPEN BRANCH	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
97*	436	BLOUNT CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
98*	413	EXLINE CREEK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

THIS * ON MAP ID INDICATES AN "X" INDICATES THAT THE QUALITATIVE SURVEY RESULTS AN INDICATE A PROBLEM WITH POLLUTANT OR SOURCES OF POLLUTION IN THE WATERSHED. NO SOURCE INFORMATION AVAILABLE FOR THIS WATERSHED.

CATNAME=CHOCTAWHATCHEE BAY
(Continued)



CHOCTAWHATCHEE BAY

CHOCTAWHATCHEE RIVER BASIN
03140203

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY	
GOOD	
THREATENED	
FAIR	
POOR	
UNKNOWN	



CHOCTAWHATCHEE RIVER BASIN

Basic Facts

Drainage Area: 4,646 square miles (about 71% in Florida)
Major Land Uses: agriculture, silviculture
Population Density: low (DeFuniak Springs, Bonifay, Chipley)
Major Pollution Sources: WWTPs
Best Water Quality Areas: spring areas, Pine Log Creek
Worst Water Quality Areas: Alligator Creek, Fish Branch
Water Quality Trends: stable quality at 3 sites
OFW Waterbodies: Choctawhatchee River
SWIM Waterbodies: none
Reference Reports:
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Choctawhatchee River Study, NFWFMD and R. Livingston, 1989
Basin Water Quality Experts:
Don Ray, DEP (Pensacola), 904/444-8300
Gray Bass, FGFWFC, 904/957-4172
Homer Royals, FGFWFC, 904/357-6631
Glenn Butts, DEP (Pensacola) 904-444-8380

In the News

* A 100 year flood occurred on the Choctawhatchee River in the spring of 1990.

Ecological Characterization

The Choctawhatchee River originates in northern Alabama, entering Florida near the town of New Hope, and flows approximately 89 miles from the Florida-Alabama line to Choctawhatchee Bay. The Choctawhatchee River basin drains roughly 3,300 square miles of northwest Florida. The remainder of the 4,646 square miles of total drainage area is located in Alabama. The average flow of the Choctawhatchee River (21 miles upstream from the mouth) is estimated as 7,000 cfs.

The Choctawhatchee River is basically alluvial in nature, and carries a relatively high sediment load. It does, however, flow through limestone areas and has considerable spring input. Holmes Creek, with an average discharge of about 1,000 cfs, is mostly spring flow. Below Holmes Creek, near Ebro, spring flow can make up as much as a third of the main river's flow. There are also several acidic, blackwater creeks that drain into the river and its major tributaries. Therefore, the basin has all three major river types. The basin also has several lakes, mostly solution or sink depressions.

The basin is used mostly for agriculture and some silviculture. The lower portion also has extensive wetlands. The upper portions of the river flow through steep banks and deposit large sand bars, while the lower river flattens out into a fairly wide (up to a mile) swampy floodplain. There are some developments along the river (mostly upper river and near the bay) but little urbanization. The major cities in the basin are located on the tributaries. Much of the actual river corridor is in public ownership by the Northwest Florida Water Management District, the Nature Conservancy, and the Division of Forestry.

Anthropogenic Impacts

The Choctawhatchee River basin exhibits more water quality problem areas than other low population density, northwest Florida basins. Overall water quality ranking is good; however, several small tributaries exhibit fair to poor quality. Sampling of the upper Choctawhatchee River in the early seventies showed only fair water quality due to Alabama domestic and industrial discharges as well as agricultural runoff in Florida. A lack of recent data makes it difficult to determine water quality, but local water quality managers indicate that agricultural, logging and dirt road runoff is still a problem. Tenmile and Wrights Creeks, also in the upper basin, are subject to similar nonpoint pollution. In addition, the City of Noma WWTP, discharges to Wright's Creek, and has been experiencing periodic operational/maintenance problems.

Upper Holmes Creek and its tributaries also have water quality problems, primarily due to WWTP point sources and agricultural runoff. Four small municipalities (Graceville, Vernon, Chipley and Bonifay) have historically had problems with their wastewater treatment systems which have lead to the degradation of the receiving waters and, ultimately, Holmes Creek. The 1988 Nonpoint Source Assessment reports odor, oxygen depletion, algal growth and some fish kills in the upper Holmes Creek basin. All of the treatment plants have been under enforcement. Although they have made upgrades, problems still exist. Of particular concern are the Chipley and Bonifay plants, the latter of which has increased its discharge to Camp Branch Creek to accommodate a new federal prison. The City of Bonifay constructed a new facility with treatment requirements of

8.8:5:3 in 1991 and appears to have improved greatly since it was placed into operation. The City of Chipley remains under a Consent Order until corrective measures are completed. The City of Vernon remains a problem source. They were recently notified of a no discharge WLA and requested to apply for a TOP to eliminate the discharge to the tributary to Holmes Creek and to construct an upland disposal site. Currently they remain under a Final Order. The City of Graceville was issued a TOP in April, 1994. The TOP requires upgrading to AWT or elimination of the discharge to surface waters by January 1997. In addition to these WWTPs, Holmes Creek receives runoff from agricultural areas and hog farms that occasionally spill waste from their highly eutrophic impoundments. Water quality in lower Holmes Creek improves, partially, due to the input of several springs near Vernon. Finally, Reedy Branch, which empties into Holmes Creek, was only sampled in 1971, but showed poor water quality then, perhaps due to heavy agricultural runoff. Problems in the southwestern portion of the basin center around West Sandy Creek and Bruce Creek. The City of Defuniak Springs discharges 0.75 MGD domestic wastewater into West Sandy Creek. A bioassessment conducted in June, 1990 revealed almost exclusive dominance by blood-worm midges, Chironomus sp below the outfall and this facility has had a history of sludge spills into the creek, thus a no discharge wasteload allocation was issued in September 1992. The City has found an upland site and a subsurface discharge investigation was scheduled for March, 1994. The Consent Order requires the elimination of their discharge to West Sandy Creek and disposal of the effluent to an upland site by March, 1996. Bruce Creek received effluent from a chicken processing plant (Showell Farms) which has also improved treatment. Showell Farms is now discharging their 1.25 MGD wastewater on an approved upland site. Finally, Bruce Creek receives sediment loads from the local county roads.

There is little STORET data on the main stem of the Choctawhatchee River below Interstate Highway 10, but there is little development and few pollution sources. However, there are some disturbing trends reported concerning the river, and there is a general perception that the biological resources are in poorer condition than expected. Certain fish populations have severely declined, notably striped bass. The lower reach of the river near the bay shows biological degradation with low numbers of species found.

The Northwest Florida Water Management District has conducted a study of the river, including water quality sampling. As a part of the study, pesticide and herbicide sampling found atrazine, a herbicide, in 17 out of 18 samples in 1987. Otherwise the report generally indicates "good" water quality index measures for the river.

Otter Creek (in Holmes County) had ammonia odors from livestock in the creek and algal blooms upstream and was channelized for cattle grazing downstream. Parrot and West Pittman Creeks had altered benthic community structures with many clean water species

missing and turbid waters with an accumulation of sediment from predominantly agricultural watersheds. Lighter Snag Creek's channel was filled with agricultural sediment leaving pools of stagnant water. Wrights Creek above Noma had cattle in the stream with resulting turbidity and animal waste. Upper Camp Branch receives run-off from dairy farms with documented coliform bacteria violations. Gum Creek had historical fishkills from cattle using the stream and the same livestock management practices exist at this time. Flat Creek below Chipley is severely impacted by agriculture and at some locations cattle use the stream with resulting bare earth, erosion, and sedimentation eliminating native fish and wildlife.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATER BODY
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140203 CHOCTAWHATCHEE RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD						WATER CLARITY						DISSOLVED OXYGEN						OXYGEN DEMAND						BIOLOGICAL SPECIES DIVERSITY						WATER QUALITY INDICES					
		# OBS			MAX	YR	PERIOD	TURB			SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECI	NAT	ART	BECK	COND	FLOW	WQI	TSI						
		BEG	END	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA	DATA							
*	WATER BODY TYPE: STREAM																																				
4	DISMAL CREEK	8	72	73	Historical	1.5	1.4	.	6.9	74	0.28	0.02	37						
*	WATER BODY TYPE: LAKE	19	LAKE JUNiper	3	80	80	Historical	2.6	15	5.5	2	0.37	0.02	6	36							
*	WATER BODY TYPE: ESTUARY																																				
1	CHOCTAWHATCHEE RIVER	12	74	79	Historical	11.5	0.9	.	5.5	65	.	6	6.9	.	0.25	0.04	5	42									
2	CHOCTAWHATCHEE RIVER	26	89	93	Current	12.0	0.7	60	8	6.8	76	.	3	7.2	42	0.53	0.04	62	82	635									
3	BLACK CREEK	4	81	81	Historical	1.0	1.2	80	2	5.2	50	0.6	.	6.0	.	0.53	0.02	3	40	30	7200	21								
5	PATE BRANCH	14	70	71	Historical	3.0	0	5	7.5	80	.	.	6.2	2	1.41	0.01	.	205	46	17									
6	PINE LOG CREEK	9	92	93	Current	1.8	0.9	80	1	7.9	82	.	7	5.8	8	0.56	0.01	.	310	54	22									
7	SEVEN RUNS	4	92	92	Current	4.1	0.8	80	3	7.8	85	.	5	6.0	1	0.56	0.02	.	310	24	27									
8	HARD LABOR CREEK	5	92	92	Current	5.2	0.6	120	4	7.2	78	.	10	5.2	1	0.48	0.04	87	.	.	.	.	.	.	.	18	32			
9	HOLMES CREEK	38	90	93	Current	9.9	1.0	49	4	5.9	65	0.4	5	7.1	66	0.52	0.05	705	114	141	33									
10	PANTHER CREEK	8	92	93	Current	6.7	0.5	50	4	7.7	78	.	6	5.9	2	0.32	0.03	118	.	.	.	.	.	.	.	23	31			
11	GOLLY CREEK	3	72	72	Historical	1.	15	15	4.5	48	.	.	8.0	94	.	8.0	94	.	.	.	.	.	.	.	.	200	75		
12	BAY BRANCH	9	92	93	Current	5.7	0.9	93	2	4.0	36	.	6	5.7	4	0.31	0.02	.	40	.	.	.	.	.	.	.	29			
13	BRUCE CREEK	24	91	93	Current	6.7	0.9	60	5	6.5	36	0.5	4	6.5	9	0.50	0.02	408	82	.	.	.	.	.	.	64	30				
14	GIM CREEK	3	92	92	Current	3.2	0.6	140	2	6.1	68	.	15	5.4	1	0.61	0.02	90	.	.	.	.	.	.	.	25	35			
15	CHOCTAWHATCHEE RIVER	13	90	92	Current	33.0	0.5	178	26	7.1	77	0.7	15	7.0	33	0.65	0.04	1250	90	.	.	.	.	.	.	70	36				
16	OPEN CREEK	5	93	93	Current	5.7	0.7	80	4	7.7	82	.	12	6.5	17	0.54	0.06	570	.	.	.	.	.	.	.	66	39			
17	WEST SANDY CREEK	7	92	93	Current	3.1	0.3	53	2	8.2	88	.	4	6.6	5	0.71	0.04	440	137	.	.	.	.	.	.	39	24				
18	REDY CREEK	7	93	93	Current	3.1	0.9	20	3	6.4	71	.	2	6.9	93	0.35	0.01	290	.	.	.	.	.	.	.	182	28			
20	SANDY CREEK	27	91	93	Current	7.7	0.6	60	7	7.7	84	0.3	4	6.8	3	0.43	0.02	735	105	.	.	.	.	.	.	36	28				
21	CAMP BRANCH	9	93	93	Current	11.0	0.4	80	3	6.6	80	.	9	6.9	54	0.38	0.13	280	.	.	.	.	.	.	.	189	42			
22	CHOCTAWHATCHEE RIVER	5	92	92	Historical	52.0	0.4	165	39	8.2	80	.	6	7.2	19	0.75	0.10	6000	660	.	.	.	.	.	.	61	47				
23	GUM BRANCH	8	79	80	Historical	29.0	0	1	4	7.1	75	.	3	7.0	65	0.55	0.04	990	343	.	.	.	.	.	.	102	33				
24	WRIGGITS CREEK	11	90	93	Current	9.0	0.5	48	5	7.1	75	0.5	4	6.6	5	0.55	0.04	990	343	.	.	.	.	.	.	102	33				
25	ALLIGATOR CREEK	7	93	93	Current	11.0	0.5	80	7	3.4	40	.	9	6.8	44	0.77	0.24	.	176	.	.	.	.	.	.	188	56				
26	SILKES CREEK	5	93	93	Current	20.0	0.6	90	36	6.1	62	.	10	6.4	19	0.62	0.03	210	.	.	.	.	.	.	81	50					
27	FISH BRANCH	3	92	92	Current	21.0	0.6	150	11	3.8	44	.	8	6.7	9	0.87	0.08	210	.	.	.	.	.	.	52	58					
28	GINGOUSE BRANCH	3	93	93	Current	13.0	0.7	80	7	6.8	67	.	6	6.7	12	0.52	0.01	120	.	.	.	.	.	.	40	34					
29	TENNILLE CREEK	14	90	92	Current	6.5	0.8	40	5	6.5	67	0.5	4	7.3	39	0.42	0.03	1700	125	.	.	.	.	.	.	123	31				
30	LITTLE CREEK	7	93	93	Current	1.7	0.3	20	1	7.1	84	.	1	7.5	109	1.60	0.01	410	.	.	.	.	.	.	235	30					
31	EAST PITTMAN CREEK	11	92	93	Current	13.0	0.5	70	8	7.7	82	0.5	4	6.8	16	0.72	0.03	3475	185	.	.	.	.	.	.	64	33				
32	PARNOT CREEK	3	92	92	Current	5.3	0.2	70	3	7.1	75	.	5	6.7	11	0.38	0.02	64	.	.	.	.	.	.	49	24					

LEGEND:
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
ALK-ALKALINITY MG/L
AIR-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG-YEAR-BEGINNING SAMPLING YEAR
COND-CONDUTIVITY UMHOS
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
FECI-FECAIL COLIFORM MPN/100ML
FLOW-FLOW CFS
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PHE-STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
TSS-TOTAL SUSPENDED SOLIDS MG/L

INDEX
WQI-RIVER 0-44 45-53 60-90
WQI-ESTUARY 0-49 50-59 60-100
WQI-LAKE 0-59 60-63 70-100
WATER QUALITY INDEX
WQI-WATER QUALITY INDEX
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-COLIFORM MPN/100ML
TSI-TROPIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140203 CHOCTAWHATCHEE RIVER

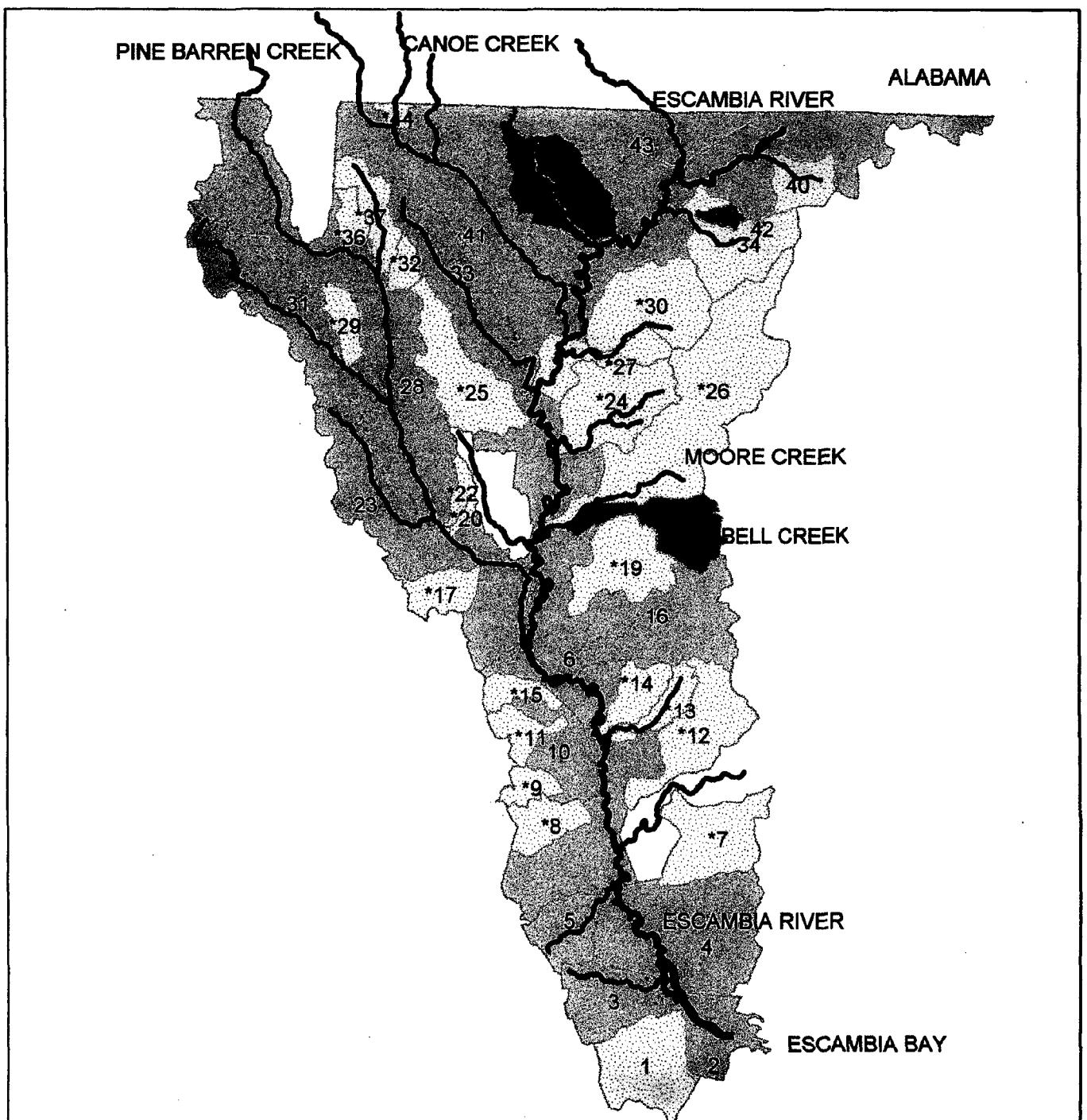
'X' = EXCEEDS SCREENING CRITERIA
'-' = MISSING DATA

WATERSHED ID	NAME	WATER BODY TYPE: ESTUARY	RANK	DATA RECORD	SCREENING VARIABLES AND CRITERIA											
					TN	STREAM TP	PH	ALK	TURB TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTI	BIOLOGICAL DIVERSITY	CHLA	SECCHI DISC
4	DISAL CREEK	GOOD	Historical	0	-	-	-	-	ALK<20	TURB>16.5 (COND>1275)	BOD>1.3	DO<4	TP>3700 (DIART<1.95)	CHLA>40	SD<.7	
19	LAKE JUNIPER	GOOD	Historical	0	-	0	0	-	TSS>19	COND>17	COD>102	TOC>27.5	FECAL>470 (DIATA<1.5)	BECK<5.5	-	
*	WATER BODY TYPE: STREAM															
1	CHOCTAWHATCHEE RIVER	GOOD	Historical	0	-	-	-	-	-	-	-	-	-	-	-	-
2	CHOCTAWHATCHEE RIVER	GOOD	Historical	0	-	-	-	-	-	-	-	-	-	-	-	-
3	BLACK CREEK	GOOD	Historical	0	-	-	-	-	-	-	-	-	-	-	-	-
5	PATE BRANCH	GOOD	Historical	0	-	-	-	-	-	-	-	-	-	-	-	-
6	PINE LOG CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
7	SEVEN RNS	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
8	HARD LABOR CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
9	HOLMES CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
10	PANTHER CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
11	GULLY CREEK	UNKN	Historical	0	-	-	-	-	-	-	-	-	-	-	-	-
12	BAY BLANCH	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
13	BRUCE CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
14	GIM CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
15	CHOCTAWHATCHEE RIVER	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
16	OPEN CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
17	WEST SANDY CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
18	REEDY CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
20	SANDY CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
21	CAMP B.RANCH	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
22	CHOCTAWHATCHEE RIVER	FAIR	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
23	JHM B.RANCH	UNKN	Historical	0	-	-	-	-	-	-	-	-	-	-	-	-
24	WRIGHT'S CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
25	ALLIGATOR CREEK	FAIR	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
26	SIXES CREEK	FAIR	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
27	FISH BRANCH	FAIR	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
28	GINHOUSE BRANCH	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
29	TERMINUS CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
30	LITTLE CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
31	EAST P.TIAN CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-
32	PARROT CREEK	GOOD	Current	0	-	-	-	-	-	-	-	-	-	-	-	-

LEGEND:
COND=CONDUCTIVITY
ALK=ALKALINITY
DO=DISSOLVED OXYGEN
BECK=BIOLOGICAL INDEX
BIOL DIV=BILOGICAL DIVERSITY
CHLA=CHLOROPHYLL
COND=NATURAL SUBSTRATE DIVERSITY
TURB=TURBIDITY
TP=PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
OXYGEN DEMAND=BOD, COD, TOC
TSS-TOTAL SUSPENDED SOLIDS
TN-NITROGEN
SECCHI=DISC METERS

FECAL-FEAL COLIFORM BACTERIA
HISTORICAL 1970 TO 1998
DIART-DIET-ARTIFICIAL SUBSTRATE DIVERSITY
TNT-NATURAL SUBSTRATE DIVERSITY

WQI OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WQI OR TSI, IS
BASED ON WATERBODY TYPE
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS



ESCAMBIA RIVER BASIN
03140305

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



ESCAMBIA RIVER BASIN

Basic Facts

Drainage Area: 4,200 (about 10% in Florida)

Major Land Uses: silviculture, agriculture

Population Density: low with urban area at mouth (Pensacola, Century

Major Pollution Sources: point sources at mouth

Best Water Quality Areas: most of basin

Worst Water Quality Areas: areas assessed by nonpoint source survey

Water Quality Trends: stable quality at 6 sites

OFW Waterbodies: none

SWIM Waterbodies: part of the Pensacola Bay System SWIM watershed

Reference Reports:

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Pensacola Bay SWIM Plan, NFWFMD, 1990

Basin Water Quality Experts:

Homer Royals, FGFWFC, 904/357-6631

Don Ray, DEP (Pensacola), 904/444-8300

Gray Bass, FGFWFC, 904/957-4172

Glenn Butts, DEP (Pensacola) 904-444-8380

In the News

- * Health advisories recommending limited consumption of largemouth bass due to mercury contamination have been issued for the Escambia River.

Ecological Characterization

Just north of the Florida-Alabama state line, the Conecuh River and Escambia Creek join to form the Escambia River. The Escambia River flows approximately 92 miles south from the Florida-Alabama state line to Escambia Bay. The drainage basin encompasses a total of 4,200 miles, only 10% of which is located in Florida. The average flow of the Escambia is 6,500 cfs; however, the flow rate is highly variable. The Escambia River is an

alluvial river, draining mostly agricultural and forestry lands. The upper basin is mostly sandy, well-drained soils, while the lower basin has more swamps, sloughs and a relatively wide floodplain. The river is characterized by its numerous cut-offs, oxbows and meanders. In-stream islands are common. At its mouth, the river breaks into numerous channels and bayous eventually emptying into Escambia Bay, one of the major lobes in the Pensacola Bay basin. During low flow, a saltwater wedge penetrates about 8 miles upstream.

Land use in the upper basin is primarily agriculture, while the lower river has more silviculture. Urbanization is occurring along the tributaries and at the river's mouth.

Anthropogenic Impacts

Water quality in this basin is generally good, but the Nonpoint Assessment found most of the tributaries to be threatened and a couple are moderately impaired. The Canoe Creek and Pine Barren Creek systems suffer from agricultural and dirt road runoff. Sedimentation, high turbidity and pesticides are suspected to be causing declining fisheries. However, the Soil Conservation Service is designing a cropland watershed plan to alleviate agricultural runoff in the Canoe Creek drainage and much of the Escambia River.

Point sources in the upper basin include the Container Corporation (a paper company in Alabama at the state border), and the WWTPs of the cities of Century and Jay. Preliminary results of a basin assessment by DEP indicate elevated bacteria values downstream of Century. Bluff Springs Campground WWTP which discharged into a tributary to Canoe Creek will go to a septic tank with sand filter and subsurface drain field by the end of 1994. A point source assessment for the Town of Jay in August, 1992 showed severe biological impairment in Bray Mill Creek. Taxa richness and species diversity was dramatically reduced below the outfall which would indicate toxicity. Bioassay samples of the effluent and receiving stream showed 100% mortality of the test organisms within 10 minutes. Chlorine residual of the effluent was 1.7 mg/l and the creek was 1.5 mg/l, which was indicated as the cause of the mortality. The creek contains at least 88% effluent therefore a no discharge wasteload allocation was issued in September 1992. They are working on plans for construction of an upland site for elimination of their current discharge to Bray Mill Creek.

The old Century facility was abandoned and discharges to the old location ceased in 1991. The new Century facility discharges directly to Escambia River. In addition, there are gravel mining operations near Century. The Soil Conservation Service is conducting a feasibility study of restoring Big Escambia Creek from previous mining activities. Until recently, the pesticide Guthion was aerially sprayed on cotton fields in Santa Rosa County. Fish kills in private impoundments resulting from spray runoff prompted a hearing ruling to tighten spraying restrictions and replace Guthion with Malathion.

Near the mouth of the river, point source discharges include Monsanto Textiles Company, the University of West Florida WWTP and thermal effluent from a power plant. A no discharge WLA was issued to the University of West Florida WWTP in March 1993. These point sources are discussed in more detail in the Escambia Bay section of the Pensacola Bay Basin narrative summary. The lower river is also affected by nonpoint pollution from increasing urbanization as well as the point sources.

Sandy Hollow Creek disappeared after sedimentation filled its channel and adjacent wetland due to agricultural run-off and now the Soil Conservation Service is working to stop the erosion. Moore and Holly Creeks receive significant agriculture run-off impacting fish and wildlife. Significant runoff from the agricultural areas of Santa Rosa County has resulted in sedimentation filling stream channels not only eliminating fish and wildlife habitat but, also causing rising waters to periodically destroy many of the bridges at steam crossings. Citizens still complain about lack of fish and the disappearance of native mussels caused by pollution in the Escambia River from the Container Corporation just across the state line in Alabama.

** USGS HYDROLOGIC UNIT: 03140305 ESCAMBIA RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN				PH ALKALINITY				BIOLOGICAL DIVERSITY				WATER QUALITY INDICES				
		#OBS	YR	PERIOD	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	OXYGEN DEMAND	TOC	PH	ALK	NITRO PHOS CHLA	TOTAL FSCL	NAT ART BECK	COND	FLOW	WQI	TSI				
*	WATER BODY TYPE: STREAM																									
1	THOMPSON BAYOU	37	71	88	Historical	7.0	45	9	5.8	66	1.0	23	5	6.2	3	0.94	0.02	1300	36	-	.37	0	.39	-	-	
2	ESCAMBIA RIVER	50	89	93	Current	18.5	0.9	70	6	7.1	77	0.7	-	5	6.2	23	0.56	0.05	2	4300	275	-	.2039	.43	-	-
3	CLEAR CREEK	6	92	92	Current	2.8	0.3	30	1	7.4	86	0.7	-	1	6.2	4	0.54	0.01	100	14	-	.43	-	.10	-	
4	ESCAMBIA RIVER	7	90	90	Current	12.0	0.7	60	5	7.3	76	0.2	-	3	6.2	0.51	0.03	2	260	80	-	.105	-	.26	-	
5	SPANISH MILL CREEK	7	92	92	Current	2.7	0.5	40	1	7.0	87	0.7	-	5	6.0	2	0.28	0.01	14	2	-	.32	-	.11	-	
6	ESCAMBIA RIVER	27	89	93	Current	20.0	0.2	46	6	7.3	79	0.6	-	5	6.0	18	0.68	0.05	4	149	90	-	.60	-	.40	-
10	THE CANAL	34	70	79	Historical	13.4	-	73	13	7.5	81	1.0	-	9	6.6	20	0.50	0.04	155	98	-	.52	.3169	.35	-	
16	THOMAS CREEK	7	89	90	Current	1.1	-	6	3	8.2	93	0.7	-	7.9	-	1.15	0.03	13	1193	75	-	.211	.6	.28	-	
18	ESCAMBIA RIVER	63	70	88	Historical	13.6	0.3	57	8	8.6	81	1.4	13	1	6.7	28	0.54	0.04	2	1070	83	-	.19	.76	.38	-
23	BLUE WATER CREEK	7	92	92	Current	1.8	0.8	18	2	9.5	93	0.3	-	1	5.7	2	0.26	0.01	300	33	-	.19	-	.12	-	
28	PINE BARREN CREEK	26	89	93	Current	6.2	1.0	30	5	7.7	83	0.3	-	2	5.8	1	0.81	0.02	375	140	-	.32	-	.25	-	
31	LITTLE PINE BARREN CR	7	92	92	Current	6.0	0.5	50	2	9.1	87	0.7	-	1	6.2	2	0.34	0.01	15046	396	-	.31	-	.29	-	
33	MITCHELL CREEK	6	92	92	Current	2.7	0.3	40	2	8.1	88	0.7	-	3	5.0	1	0.15	0.02	400	75	-	.17	.16	.16	-	
40	BRAY MILL CREEK	9	92	93	Current	3.8	0.2	8	2	8.8	94	0.3	-	1	5.9	1	3.14	0.01	.56	-	.73	-	.23	-		
41	CANOE CREEK	17	89	92	Current	3.1	0.5	23	3	8.0	84	0.3	-	1	6.3	2	1.08	0.03	.465	.34	-	.35	-	.20	-	
42	ESCAMBIA RIVER	1638	89	93	Current	20.5	0.7	78	22	7.3	82	1.2	-	7	6.7	25	0.59	0.06	4	388	93	-	.92	.4051	.40	-
43	BIG ESCAMBIA CREEK	6	92	92	Current	10.0	0.7	50	8	7.9	86	0.7	-	4	6.3	1	0.47	0.02	3000	120	-	.28	-	.31	-	

LEGEND:
 DO-DISSOLVED OXYGEN DEMAND MG/L
 CHLA-CHLOROPHYLL UG/L
 COD-CHEMICAL OXYGEN DEMAND MG/L
 END YR-ENDING YEAR
 COLOR-COLOR PCU
 BEG-BEGINNING Sampling YEAR
 BECK-BIOTIC INDEX
 COND-CONDUCTIVITY UMHOS
 TUR-TURBIDITY MG/L
 SD-SECCHI DISC METERS
 TOC-TOTAL ORGANIC CARBON MG/L
 NAT-NATURAL SUBSTRATE DIVERSITY
 NITRO-TOTAL NITROGEN MG/L
 FEC-FEICAL COLIFORM MPN/100ML
 PH-PH STANDARD UNITS
 TSI-TROPIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L
 PRO-TOTAL PHOSPHORUS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

* = EXCEEDS SCREENING CRITERIA
0 = WITHIN SCREENING CRITERIA
- = MISSING DATA

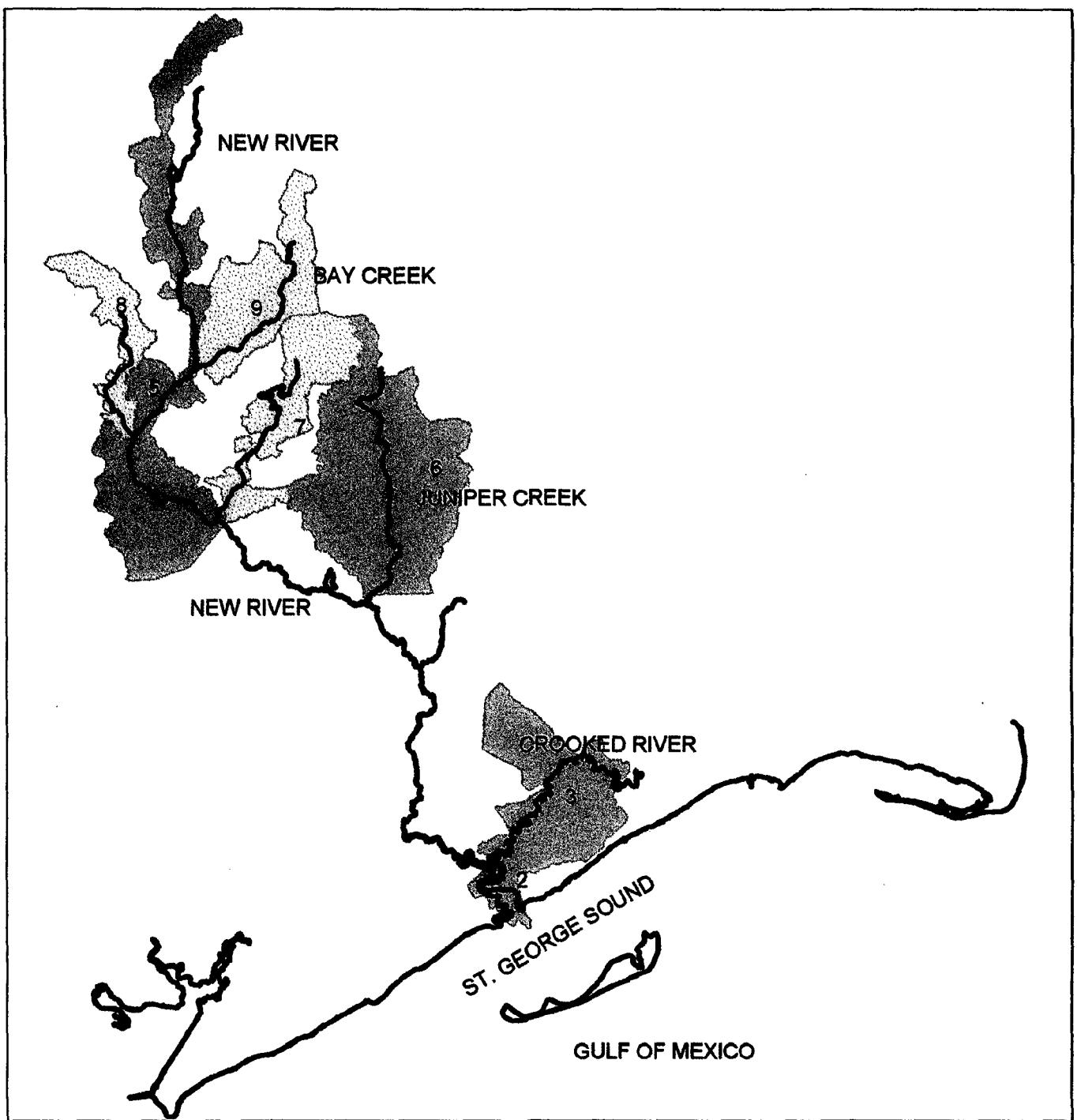
WATERSHED ID	NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	SCREENING VARIABLES AND CRITERIA				
													WQI OR ORGANIC INDEX	TSI	HISTORICAL	COLIFORM BACTERIA	BIOLOGICAL DIVERSITY	CHLA CONCENTRATION	SECCHI DISC METERS
*	WATER BODY TYPE: STREAM																
1	THOMPSON BAYOU	FAIR	Historical	0	-	-	-	-	x	-	0	-	0	-	-	-	-
2	ESCARBIA RIVER	GOOD	Current	0	0	-	-	0	x	-	0	-	0	-	-	-	-
3	CLEAR CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
4	ESCARBIA RIVER	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
5	SPANISH MILL CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
6	ESCARBIA RIVER	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
10	THE CANAL	GOOD	Historical	0	-	-	-	0	x	-	0	-	0	-	-	-	-
16	THOMAS CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
18	ESCARBIA RIVER	GOOD	Historical	0	-	-	-	0	x	-	0	-	0	-	-	-	-
23	BLUE WATER CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
28	PINE BARREN CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
31	LITTLE PINE BARREN CR	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
33	MITCHELL CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
40	BRAY MILL CREEK	FAIR	Current	x	-	-	-	x	x	-	0	-	0	-	-	-	-
41	CANON CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
42	ESCARBIA RIVER	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-
43	BIG ESCARBIA CREEK	GOOD	Current	0	-	-	-	0	x	-	0	-	0	-	-	-	-

** USGS HYDROLOGIC UNIT: 03140305 ESCARBIA RIVER

LEGEND:
 COND=CONDUCTIVITY
 ALK=ALKALINITY
 BECK-BECK'S BIOTIC INDEX
 CURRENT=1989 TO 1993
 DIAR=DIASTROPHIC SUBSTRATE DIVERSITY
 DINAT=NATURAL SUBSTRATE DIVERSITY
 CHLA=CHLOROPHYLL
 TP=PHOSPHORUS
 TP-TOTAL COLIFORM BACTERIA
 HIS-TOTAL SUSPENDED SOLIDS
 HISTORICAL=1970 TO 1988
 OXYGEN DEMAND=BOD, COD, TOC
 PH-PH
 TURB-TURBIDITY
 TN-NITROGEN
 SD=SECCHI DISC METERS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAP INDICATES NO STORED INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

		CATNAME=ESCAMBIA RIVER HUC=03140305			
M	A	W	B	S	O
P	I	B	A	E	F
T	D	S	T	S	T
D	D	I	R	N	F
1	586	THOMPSON BAYOU	GOOD	POOR	X
2	10F	ESCAMBIA RIVER	GOOD	FAIR	X
3	531	CLEAR CREEK	GOOD	FAIR	X
4	10E	ESCAMBIA RIVER	GOOD	FAIR	X
5	475	SPANISH MILL CREEK	GOOD	FAIR	X
6	10D	ESCAMBIA RIVER	GOOD	FAIR	X
7*	389	BRADBURY CREEK	GOOD	FAIR	X
8*	395	WILLIAMS CREEK	GOOD	FAIR	X
9*	374	ROCKY BRANCH	GOOD	FAIR	X
10	341	THE CANAL	GOOD	THREAT	X
11*	342	PRETTY BRANCH	GOOD	FAIR	X
12*	310	TERNILLE CREEK	GOOD	FAIR	X
13*	315	BUFFALO MILL CREEK	GOOD	FAIR	X
14*	316	CROOKED CREEK	GOOD	FAIR	X
15*	326	WILDER BRANCH	GOOD	FAIR	X
16	258	THOMAS CREEK	GOOD	FAIR	X
17*	265	MORGAN BRANCH	GOOD	FAIR	X
18	10A	ESCAMBIA RIVER	GOOD	FAIR	X
19*	244	DELANY CREEK	GOOD	FAIR	X
20*	237	GULLY BRANCH	GOOD	FAIR	X
21*	236	BELL CREEK	GOOD	POOR	X
22*	217	BLACK BRANCH	GOOD	FAIR	X
23	192	BLOOD WATER CREEK	GOOD	FAIR	X
24*	168	MC DAVID CREEK	GOOD	FAIR	X
25*	131	COTTON CREEK	GOOD	FAIR	X
26*	111	MORDE CREEK	GOOD	FAIR	X
27*	108	ESCAMBIA RIVER	GOOD	FAIR	X
28	5	PINE BARREN CREEK	GOOD	FAIR	X
29*	134	UNNAMED BRANCH	GOOD	FAIR	X
30*	118	MC COSTILL MILL CREEK	GOOD	FAIR	X
31	87	LITTLE PINE BARREN CR	GOOD	FAIR	X
32*	102	HOLLAND BRANCH	GOOD	FAIR	X
33	71	MITCHELL CREEK	GOOD	THREAT	X
34*	74	HOLLY CREEK	GOOD	FAIR	X
35*	89	WILSON BRANCH	GOOD	THREAT	X
36*	79	HALL BRANCH	GOOD	FAIR	X
37*	39	BESTWORKS BRANCH	GOOD	FAIR	X
38*	9	Pritchett Mill Branch	GOOD	POOR	X
39*	25	WIGGINS BRANCH	GOOD	POOR	X
40	36	BRAY MILL CREEK	GOOD	POOR	X
41	7	CANE CREEK	GOOD	FAIR	X
42	10C	ESCAMBIA RIVER	GOOD	FAIR	X
43	10	BIG ESCAMBIA CREEK	GOOD	FAIR	X
44*	8	HOBBS BRANCH	GOOD	FAIR	X



NEW RIVER BASIN
03130013

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



page 81

NEW RIVER BASIN

Basic Facts

Drainage Area: 569 square miles

Major Land Uses: forest, wetlands

Population Density: low (Carrabelle)

Major Pollution Sources: WWTP, septic tank seepage, marinas

Best Water Quality Areas: New River, Juniper Creek, Crooked River

Worst Water Quality Areas: Carrabelle River near WWTP

Water Quality Trends: no trend data

OFW Waterbodies:

Alligator Harbor State Aquatic Preserve

Apalachicola Bay State Aquatic Preserve

SWIM Waterbodies: none

Reference Reports:

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

Gray Bass, FFWFC, 904/957-4172

Don Ray, DEP (Pensacola), 904/444-8300

In the News

* Upgrades in treatment and discharge of the Carrabelle WWTP occurred in 1988.

* Tate's Hell Swamp (184,000 acres) was sold in 1991 by Proctor and Gamble to a Georgia land broker.

Ecological Characterization

The New River Basin is a small panhandle Florida coastal basin between the Apalachicola River and Ochlockonee River basins. The basin drains about 569 square miles of low wet forest in Liberty and Franklin Counties. Its headwaters are in the Apalachicola National Forest, and it flows through Tate's Hell Swamp. The swamp is a vast forested plain that was extensively ditched, drained, cleared and replanted in the mid-1960s. The river is very

darkly stained, one of the "blackest" of the blackwater streams. Forestry and wetland areas are the predominant land uses in the basin. After its confluence with Crooked River, the stream becomes wider, estuarine in character and is called the Carrabelle River. Little of the land in the basin has been developed. Only 1% of the basin is urban area, principally the coastal community of Carrabelle. Seafood processing is the area's major economic activity.

Anthropogenic Impacts

Sampling of the New River has been very limited; however, it drains an area nearly devoid of pollution sources except for a few logging operations and roads. The portion of the basin in St. George Sound also has good water quality except for a small area near Carrabelle. The city previously discharged primary treated wastewater directly into the Sound. A new plant with both improved treatment and discharge to a sprayfield began functioning in 1988. However, marinas and small shellfish processing areas in Carrabelle and Eastpoint continue to threaten water quality in their immediate vicinity. One of the larger processing facilities was ordered to discontinue their surface water discharge.

The streams in this basin have been severely modified by dredge and fill activities from past and present silviculture practices. Planted pines have replaced native hardwoods along stream banks, topography flattened, stream channels filled from logging roads/clear cutting, and deep ditches are used to lower the basin's water table.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

++ USGS HYDROLOGIC UNIT: 03130013 NEW RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD			WATER CLARITY			DISSOLVED OXYGEN			PH ALKALINITY			TROPHIC STATUS			COLIFORM			BIOMASS SPECIES DIVERSITY			COND FLOW			WQI			
		BEG	END	DATA	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO PHOS CHLA	CHLA	TOTAL FECAL NAT.	ART	BECK	COND	FLOW	WQI	TSI					
* WATER BODY TYPE: ESTUARY																													
4 ALLIGATOR HARBOR		6	87	87	Historical	8.0	0.5	30	34	9.4	101	2.2	.	.	7.5	.	1.08	0.06	13	13	5	.	.	30500	.	.	64		
* WATER BODY TYPE: STREAM																													
1 NEW RIVER	36	78	79	Historical	10.1	0.7	125	16	5.6	62	.	.	.	5.6	0.72	0.01	1	15	7.5	55	0.67	0.01	1	107	.	.	42	.	
2 NEW RIVER	16	92	93	Current	9.4	0.7	125	16	5.6	62	.	.	.	17	6.0	0.60	0.02	0	253	62	.	.	.	.	23150	.	.	44	.
3 CROOKED RIVER	20	92	93	Current	4.7	0.7	155	2	4.0	48	.	.	.	17	6.0	1	0.72	0.01	500	24	.	.	.	.	73	.	.	43	.
5 NEW RIVER	4	92	92	Current	2.7	0.5	300	4	6.1	62	.	.	.	28	4.6	1	0.57	0.01	500	24	.	.	.	.	59	.	.	39	.
6 JUNIPER CREEK	10	92	93	Current	2.5	0.5	225	2	6.2	64	.	.	.	31	4.0	1	0.57	0.01	51	51	.	.	.	.	35	.	.	36	.
7 CAT BRANCH	4	92	92	Current	4.7	0.5	500	1	5.4	63	.	.	.	35	4.1	1	0.89	0.01	2200	50	.	.	.	.	54	.	.	49	.
8 WEST PRONG NEW RIVER	5	92	92	Current	2.9	0.7	300	1	3.7	43	.	.	.	26	4.3	1	0.73	0.01	14000	26	.	.	.	.	31	.	.	46	.
9 BAY CREEK	4	92	92	Current	3.3	0.4	400	1	3.0	36	.	.	.	31	4.1	1	0.75	0.01	2000	8	.	.	.	.	63	.	.	48	.

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L DOAT-DO % SATURATION CHLA-CHLOROPHYLL USG/L END-YR-ENDING YEAR COD-CHEMICAL OXYGEN DEMAND MG/L FECL-YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FLOW-FLOW CFS COND-CONDUTIVITY UMHOS BRCK-BRCK'S BIOTIC INDEX

MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
MEDIAN VALUES FOR EACH WATERSHED NATURAL SUBSTRATE DIVERSITY WQI-WATER QUALITY INDEX
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE NITRO-TOTAL NITROGEN MG/L
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL TOTAL TOTAL COLIFORM MPN/100ML
WQI-ARTIFICIAL SUBSTRATE DI TS-TROPIC STATE INDEX
ART-ARTIFICIAL SUBSTRATE DI ISS-TOTAL SUSPENDED SOLIDS MG/L
BEG YR-BEGINNING SAMPLING YEAR PH-PH STANDARD UNITS
COND-CONDUTIVITY UMHOS FLOW-FLOW CFS
BRCK-BRCK'S BIOTIC INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03130013 NEW RIVER

'X' = EXCEEDS SCREENING CRITERIA
'0' = WITHIN SCREENING CRITERIA
. = MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	PH	ALK	TURB < COND	OXYGEN DEMAND	COLIFORM	BIOLOGICAL DIVERSITY	CHLA	SECCHE DISC
			TN>2.0	TP>.46	TP>.12	PH>8.8		ALK<20	TURB>16.5 (COND>1275)	BOD>3.3	DO<4	TOD>3700 (DIAG>1.95)	CHLA>40
* WATER BODY TYPE: ESTUARY													
4 ALLIGATOR HARBOR	1	UNKN Historical	0	.	1	0	0	.	1	x	1	0	1
* WATER BODY TYPE: STREAM													
1 NEW RIVER	1	GOOD Historical	0	.	0	.	0	.	0	.	1	1	1
2 NEW RIVER	2	GOOD Current	0	.	0	.	0	.	0	.	0	0	0
3 CROOKED RIVER	3	GOOD Current	0	.	0	.	x	.	0	.	0	0	0
5 NEW RIVER	5	GOOD Current	0	.	0	.	x	.	0	.	0	0	0
6 JUNiper CREEK	6	GOOD Current	0	.	0	.	x	.	x	.	0	0	0
7 CAT BRANCH	7	FAIR Current	0	.	0	.	x	.	x	.	0	0	0
8 WEST PRONG NEW RIVER	8	FAIR Current	0	.	0	.	x	.	x	.	0	0	0
9 BAY CREEK	9	FAIR Current	0	.	0	.	x	.	x	.	0	0	0

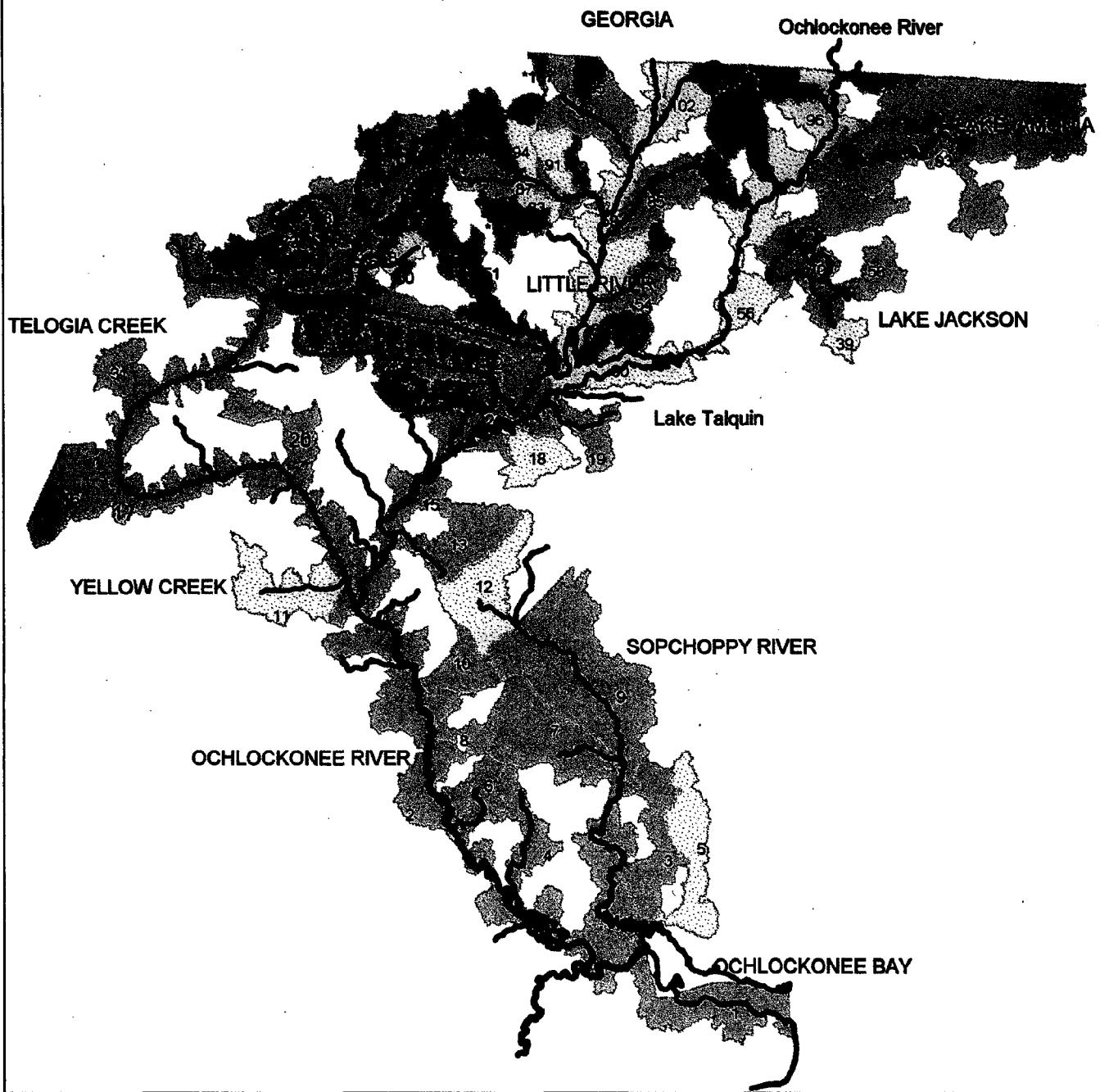
LEGEND:
COND=CONDUCTIVITY
ALK=ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV=BIOTICAL DIVERSITY
CHLA-CHLOROPHYLL
DO=DISSOLVED OXYGEN
DIAT=ARTIFICIAL SUBSTRATE DIVERSITY
DNAT=NATURAL SUBSTRATE DIVERSITY
TP=PHOSPHORUS
TOD=TOTAL COLIFORM BACTERIA
TOT=TOTAL COLIFORM BACTERIA
TSS=TOTAL SUSPENDED SOLIDS
TURB=TURBIDITY
SD=SECCHE DISC METERS

**SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP**

** USGS HYDROLOGIC UNIT: 03130013 NEW RIVER

| <--- PLEASE READ THESE COLUMNS VERTICALLY
|
| DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

GEND:	DOSAT-DO SATURATION FCOLI-FEICAL COLIFORM K-AALKALINITY D-BIOCHEN. OXYGEN DEMAND LA-CHLOROPHYLL	TOTAL COLIFORM TEMP-TEMPERATURE TN-NITROGEN TOC-T-ORGANIC CARBON TP-PHOSPHORUS	TURB-TURBIDITY TSI-TROPHIC STATUS INDEX FOR LAKES AND ESTUARIES WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS
CONC:	DO CONC. DOG. MMOL/L FCOLI CONC. DOG. MMOL/L K-AALKALINITY CONC. DOG. MMOL/L D-BIOCHEN. OXYGEN DEMAND CONC. DOG. MMOL/L LA-CHLOROPHYLL CONC. DOG. MMOL/L	TCOLI-TOTAL COLIFORM TEMP-TEMPERATURE TN-NITROGEN TOC-T-ORGANIC CARBON TP-PHOSPHORUS	TURB-TURBIDITY TSI-TROPHIC STATUS INDEX FOR LAKES AND ESTUARIES WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS



OCHLOCKONEE RIVER BASIN
03120003

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



OCHLOCKONEE RIVER BASIN

Basic Facts

Drainage Area: 1,553 square miles (about 81% in Florida)

Major Land Uses: forest, agriculture

Population Density: low (Quincy, Havana, Sopchoppy, part of Tallahassee)

Major Pollution Sources: agricultural runoff, WWTP, strip mining

Best Water Quality Areas: Sopchoppy River, lower Ochlockonee River

Worst Water Quality Areas: Telogia Creek below Gretna WWTP, Little River

Water Quality Trends: a couple of watersheds on Ochlockonee showed improving trends; the Sopchoppy, Lake Jackson and several small streams show stable trends

OFW Waterbodies:

Ochlockonee River

Lake Jackson

Sopchoppy River within Apalachicola National Forest

Lake Talquin State Recreation Area

SWIM Waterbodies: Lake Jackson

Reference Reports:

Water Quality of the Ochlockonee River, DEP (Tallahassee, Biology), 1987

Lake Jackson Management Plan, NFWFMD, 1990

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

Gray Bass, FGFWFC, 904/957-4172

Don Ray, DEP (Pensacola), 904/444-8300

Homer Royals, FGFWFC, 904/357-6631

Glenn Butts, DEP (Pensacola) 904/444-8380

In the News

- * Concern over the health of Lake Jackson led to a temporary building moratorium in the immediate watershed area in 1989.
- * Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for Lake Talquin, Lake Iamonia, and the Ochlockonee River.

Ecological Characterization

The Ochlockonee River originates in the clay hills of Georgia, entering Florida approximately 15 miles north of Tallahassee. The river flows 162 miles, first through rolling piedmont hills near the headwaters, then through sandy coastal plains before entering the Gulf of Mexico at Panacea, Florida. An impoundment, Lake Talquin, lies directly west of Tallahassee covering 8,850 acres. The Ochlockonee River averages 1,600 cfs upstream of Lake Talquin, although flow in the river fluctuates widely with occasional periods of flooding and drought. The Florida drainage basin is 1,253 square miles (there are an additional 300 square miles in Georgia).

The upper river and the Little River tributary are more alluvial in nature than blackwater, although both have some color. Land use in the upper clay hills portion of the basin is mostly agriculture, and many of its headwater tributaries are impounded for farm ponds. To the east of the upper river, in Florida, are two shallow lakes that are undergoing rapid residential development. The southernmost, Lake Jackson, receives a substantial portion (roughly one-third) of Tallahassee's urban drainage. Lake Jackson also has the distinction of periodically (on average every twenty-five years) draining via sinkholes, leaving only a few deep pools. In the middle impounded section, Lake Talquin has both agriculture and silviculture land use. The lower river flows mostly through forested coastal lowlands encompassing the Apalachicola National Forest. A remote blackwater creek, the Sopchopy River, and the Ochlockonee River both flow into the western end of the Ochlockonee Bay, a small embayment along the Apalachee Bay coast.

Anthropogenic Impacts

There are several problem areas evident in this basin, mostly in the upper portions of the basin. First, Little River and its upstream tributary, Quincy Creek, have historically shown bacteria, nutrient and turbidity problems. Upstream point sources include strip mines (Englehardt, Floridan, and Oil Dry for Fuller's earth) and the City of Quincy WWTP (1.5 MGD design capacity). The only background stream for monitoring fuller's earth mining is Attapulgus Creek northeast of Attapulgus Ga. as all the streams of this region in Florida are impacted by mining activities.

Bioassessment by Butts, 1990 found degraded conditions in Womack Mill Creek below the Havana WWTP discharge. Effluent water chemistry showed elevated BOD (21

mg/L), ammonia (11 mg/L), and coliform bacteria violations. Benthic macroinvertebrate fauna below the discharge was dominated by pollution tolerant forms including oligochaete worms (66% of fauna) and tolerant chironomid larvae (21% of fauna). An advanced wastewater treatment WQBEL was issued. An AWT WQBEL was re-established in April 1993. The City of Havana was issued a TOP in 1993 requiring an upgrade to AWT or an elimination of their surface water discharge by October, 1996.

Another problem area is the Ochlockonee River immediately below the Georgia-Florida state line. Water quality problems include high bacteria, nutrient and turbidity values and low macroinvertebrate diversity. A 1987 survey of the upper Ochlockonee basin conducted by the DEP Biology Section indicated that the primary source for the heavy turbidity and siltation is agricultural runoff in Georgia. Siltation is also apparently responsible for the depressed macroinvertebrate community and consequent decline in the fisheries reported by the Nonpoint Source Assessment. The Georgia Soil and Water Conservation Committee is applying for federal funds through the Georgia Environmental Protection Division to begin implementing farming Best Management Practices. Georgia point sources (primarily WWTPs and a pickle canning factory) appear to be responsible for the nutrient and bacteria problems in the upper reaches.

Lake Talquin has good water quality, with the exception of its junction with Little River where the stream adds nutrients and turbidity. There are some algae and aquatic weed problems, but the lake still serves as an excellent fishing and swimming area. It also acts to improve water quality downstream by allowing turbidity to settle out.

A tributary to the Ochlockonee, Telogia Creek, has severe nutrient and DO problems in the upper portions due to runoff from the Gretna WWTP overland flow /sprayfields. Court action has been taken against the City of Gretna to remove all discharges from Telogia Creek. The Court settlement is pending. Nutrient and weed problems extend several miles downstream.

Water quality in the Lower Ochlockonee River is good. Turbidity, sedimentation, bacteria, and stream habitat destruction was observed from county road maintenance in Caney and Pine Creeks along C-375 below Lake Talquin. Additionally, the Sopchoppy River has excellent water quality. However, Ochlockonee Bay is reported to have high nutrients and low macroinvertebrate diversity, perhaps due to nonpoint sources (construction, clear cutting and septic tank leachate) in the immediate vicinity of the bay.

Finally, concern about Lake Jackson in Tallahassee is growing. Although for the most part the water quality is still good, the lake and sediments, especially in Megginnis Arm, are threatened from residential, construction, and road/parking lot stormwater runoff. There is a stormwater treatment facility, but it is undersized and has had operating troubles. A major restoration effort, the dredging of contaminated sediments from Megginnis Arm, was recently completed. Due to local controversy and the fact that the

lake is a priority SWIM waterbody, more attention is being directed toward the expansion and maintenance of the facility and other lake management improvements.

The other major waterbody in the basin, the Sopchopy River, predominantly draining wetlands and forest land, shows excellent water quality. Its high color, low pH, and relatively low DO levels are natural conditions due to its swamp drainage origin. It is an Outstanding Florida Water.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03120003 CICHLCKONEE RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD			WATER CLARITY			DISSOLVED OXYGEN			PH ALKALINITY			TROPHIC STATUS			COLIFORM			BIOLOGICAL SPECIES DIVERSITY			COND FLOW			WATER QUALITY INDICES		
		#OBS	YR	PERIOD	TURB	SD COLOR	TSS	DO	BOD	COD	TOC	PH	ALK	NITRO PHOS	CHLA	TOTAL FECAL	NAT ART	BECK COND	WQI	TSI	GOOD	FAIR	PASS	WQI				
*	WATER BODY TYPE: ESTUARY	10	75	79	Historical	10.0	0.2	179	25	7.7	82	1.1	-	23	7.3	19	0.90	0.06	3	3100	180	2.9	-	1875	-	-	47	
*	WATER BODY TYPE: LAKE	4	92	92	Current	9.6	0.6	60	7	7.4	83	-	-	4	6.9	3	0.54	0.02	-	84	-	-	-	-	-	-	-	54
16	Outside Lake	4	89	89	Current	16.0	0.9	-	8.2	105	-	-	6.9	-	0.95	0.09	13	-	-	-	-	-	-	-	-	-	59	
21	Lake Talquin	4	89	89	Current	24.0	0.8	-	8.6	89	-	-	7.0	-	0.81	0.18	24	-	-	-	-	-	-	-	-	-	60	
30	Lake Talquin	4	89	89	Current	59.0	1.36	25	-	3.0	25	1.0	-	4.9	0.77	0.39	-	-	-	-	-	-	-	-	-	51		
58	LAKE OVERSTREET DRAIN	17	89	93	Current	4.0	1.5	-	8.0	91	-	-	6.4	10	0.62	0.04	6	-	-	-	-	-	-	-	-	45		
70	LAKE JACKSON	129	89	93	Current	1.3	2.3	29	-	7.0	67	-	-	5.7	3	0.44	0.01	8	-	-	-	-	-	-	-	-	33	
93	LAKE IAMONIA OUTLET	32	79	80	Historical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
*	WATER BODY TYPE: STREAM	20	89	93	Current	5.0	1.0	90	3	6.0	71	0.4	-	11	6.6	-	0.68	0.07	3	110	18	-	-	-	-	-	26	
2	BUCKHORN CREEK	75	81	82	Historical	2.5	-	6	5.6	64	-	-	3.6	4.0	1	0.86	0.02	-	420	44	-	-	-	-	-	-	42	
3	SYPRETT CREEK	6	92	92	Current	1.8	0.5	400	1	5.6	-	-	4.2	-	0.39	0.02	-	-	-	-	-	-	-	-	-	46		
4	OTTER CREEK	17	78	78	Historical	18.0	-	335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39		
5	VAUSS BRANCH	37	76	76	Historical	12.5	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6	MONKEY CREEK	4	85	85	Historical	9.0	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42		
7	SMITH CREEK	38	76	77	Historical	8.5	-	153	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34		
8	SOPCHOPHY CREEK	28	89	93	Current	1.3	0.4	160	1	6.9	75	-	-	25	6.6	14	0.55	0.05	-	31	-	-	-	-	-	-	22	
9	HILL CREEK	39	76	77	Historical	15.6	-	149	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43		
10	YELLOW CREEK	4	92	92	Current	5.2	0.7	350	1	6.1	69	-	-	28	4.6	1	0.72	0.01	-	3000	80	-	-	-	-	-	46	
11	WEST BR SOPCHOPHY RI	74	76	78	Historical	21.8	-	425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50		
12	BLACK CREEK	2	93	93	Current	2.0	0.3	60	1	7.7	82	-	-	11	7.0	35	0.28	0.01	-	450	-	-	-	-	-	-	29	
13	CYPRESS BRANCH	6	79	79	Historical	10.0	-	4.6	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64		
14	OCHLOCKONEE RIVER	8	93	93	Current	10.5	0.8	100	2	6.2	71	-	-	9	6.8	11	0.60	0.08	-	425E3	107	-	-	-	-	-	63	
15	OTTER CREEK	15	89	93	Current	4.7	0.8	120	6	7.2	79	3.3	-	8	6.6	4	1.33	0.08	-	72	-	-	-	-	-	-	33	
16	FREEMAN CREEK	8	89	89	Current	16.0	1.0	-	7.3	91	-	-	7.0	-	0.99	0.08	19	-	-	-	-	-	-	-	48			
17	HARVEY CREEK	7	89	93	Current	2.6	0.6	40	1	7.0	76	-	-	3	6.6	2	0.20	0.01	-	1100	-	-	-	-	-	-	27	
18	BIG CREEK	8	93	93	Current	1.6	0.4	75	1	8.2	87	-	-	8	5.2	1	0.20	0.01	-	239	-	-	-	-	-	-	23	
20	OKLAHOMA CREEK	51	73	77	Historical	3.0	-	88	-	8.0	87	-	-	7	4.3	1	0.33	0.02	-	220	-	-	-	-	-	-	27	
28	MILL BRANCH	3	79	79	Historical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64		
31	MEGANIS ARM RUN	26	89	93	Current	14.0	0.9	286	144	5.7	56	9.0	55	17	6.3	23	0.64	0.08	8	-	-	-	-	-	-	51		
39	BEAR CREEK	5	92	92	Current	4.1	0.2	50	3	8.6	90	-	-	5	6.5	2	0.27	0.07	-	1000	280	-	-	-	-	-	44	
48	TIMBERLANDS RUN	7	89	89	Current	154.0	0	214	234	-	-	8.0	82	21	-	12	1.83	1.99	-	-	-	-	-	-	-	84		
50	HARBINWOOD ESTATES DN	7	89	89	Current	117.0	-	231	64	-	-	3.0	29	11	-	26	0.80	0.66	-	-	-	-	-	-	-	63		
53	MONROE CREEK	7	93	93	Current	7.4	0.4	50	5	7.9	86	-	-	5	7.0	14	0.48	0.09	-	192	-	-	-	-	-	-	33	
54	Ochlockonee River	90	89	93	Current	20.0	-	-	-	7.1	79	-	-	6.7	16	1.08	0.16	-	57	-	-	-	-	-	-	29		
56	MULE CREEK	3	79	79	Historical	-	-	-	-	7.3	84	-	-	-	-	-	-	-	-	-	-	-	-	-	45			
57	LITTLE RIVER	31	89	93	Current	24.0	0.8	110	12	7.3	83	-	-	7	6.9	12	1.0	0.11	-	21	12250	223	-	-	-	-	-	50
59	JUNIPER CREEK	7	93	93	Current	6.3	0.6	120	4	6.2	68	-	-	12	6.6	5	1.37	0.16	-	240	-	-	-	-	-	-	51	

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
COND-CONDUTIVITY URSUS
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU/L
DOD-DISSOLVED OXYGEN MG/L
DO-SATURATION
END-YR-ENDING YEAR
FEC-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
ORG-C-ORGANIC CARBON MG/L
P-H-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
TSS-TOTAL SUSPENDED SOLIDS MG/L

MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS
TOD-TOTAL ORGANIC CARBON MG/L
WQI-WATER QUALITY INDEX
WQI-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03120003 OCHLOCKONEE RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN				OXYGEN DEMAND				PH ALKALINITY				TROPHIC STATUS				BIOLOGICAL DIVERSITY			
		#OBS	YR	PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL FEC	NAT	ART	BECK	COND	FLOW	WQI	TSI			
73	YON CREEK	3	79	79	Historical	3.3	0.3	45	1	7.4	85	-	-	5.1	-	1.88	0.02	-	380	164	-	-	-	-	32	14	19		
81	TALLAHASSEE CREEK	6	92	92	Current	16.3	6.3	63	-	7.5	82	-	-	4	6.6	5	1.06	0.15	-	1304	-	-	-	-	-	58	-	25	
83	TAYLARD BRANCH	18	75	76	Historical	13.0	0.3	100	4	8.3	89	-	-	4	6.9	31	1.06	0.15	-	-	-	-	-	-	92	4	51		
85	HURRICANE CREEK	7	93	93	Current	12.0	0.2	60	11	7.5	83	0.9	-	8	7.1	14	0.47	0.07	-	280	-	-	-	-	-	55	-	37	
87	QUINCY CREEK	10	89	92	Current	20.0	0.2	80	-	7.2	78	-	-	3	6.3	20	1.05	0.09	4	9750	233	-	-	-	-	65	-	44	
91	HUBBERT BRANCH	19	75	76	Historical	10.8	-	43	-	7.4	78	-	-	7	6.5	10	0.69	0.11	-	700	-	-	-	-	-	48	-	52	
94	HOLMAN BRANCH	21	75	76	Historical	24.0	0.5	129	13	6.7	74	-	-	3	6.5	9	0.35	0.11	-	1035	-	-	-	-	-	38	2	47	
96	Ochlockonee River	64	89	93	Current	20.0	0.5	120	10	7.8	85	-	-	8	6.5	17	1.21	0.18	-	18675	750	-	-	-	-	153	-	59	
98	WILLACOHEE CREEK	6	92	92	Current	100.0	0.2	130	68	6.5	68	-	-	5	6.9	10	0.16	0.08	-	440	330	-	-	-	-	42	-	38	
102	SWAMP CREEK	7	92	92	Current	-	-	-	-	-	-	-	-	6	6.4	10	0.33	0.40	-	4850	800	-	-	-	-	49	-	56	

LEGEND:
 DO-DISSOLVED OXYGEN MG/L
 CHLA-CHLOROPHYLL UG/L
 COD-CHEMICAL SUBSTRATE DI
 BEG-YEAR-BEGINNING SAMPLING YEAR
 END-YR-ENDING YEAR
 COLOR-COLOR PCU
 BECK-BECK'S BIOTIC INDEX
 COND-CONDUCTIVITY UMSOS
 DISC-MAXIMUM NUMBER OF SAMPLES
 END-YR-ENDING YEAR
 FEC-FEICAL COLIFORM MPN/100ML
 FLOW-FLOW CF S
 NAT-NATURAL SUBSTRATE DIVERSITY
 NITRO-TOTAL NITROGEN MG/L
 PH-PH STANDARD UNITS
 PHOS-TOTAL PHOSPHORUS MG/L
 TCI-TROPIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L

INDEX
 GOOD FAIR POOR
 WQI-RIVER 0-44 45-59 60-90
 TSI-ESTUARY 0-49 50-59 60-100
 TSI-LAKE 0-59 60-69 70-100
 WQI-WATER QUALITY INDEX
 TOC-TOTAL ORGANIC CARBON MG/L
 TS1-TROPIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03120003 OCHLOCKONEE RIVER

'X' = EXCEEDS SCREENING CRITERIA
'0' = WITHIN SCREENING CRITERIA
'.' = MISSING DATA

COND-CONDUCTIVITY
ALKALINITY
BECK-BECK'S BIOTIC INDEX
DIVERSITY DIV-BIOLOGICAL DIVERSITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1990
DIAT-ARTIFICIAL S

TP-
TOTAL
TSS
TUR-
SD-
SUSPENDED SOLIDS
VOLATILE SUSPENDED SOLIDS
PH-PH
TOC
DEMAND-BOD, COD, TOC
OXYGEN
HISTORICAL-1970 TO 1988
FEACAL-FECAL COLIFORM BACTERIA

21 OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WOI OR TSI, IS
BASED ON WATERBODY TYPE

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

"X"=EXCEEDS SCREENING CRITERIA
"—"=MISSING DATA

** USGS HYDROLOGIC UNIT: 03120003 OCHLOCKONEE RIVER

SCREENING VARIABLES AND CRITERIA

WATERSHED ID	NAME	RANK	DATA RECORD	TN	STREAM	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM		BIOL DIVERSITY	CHLA CONC.	SECCHE DISC			
												TP	ALK>20	TURB>16.5	COND>1275	TSS>18	COD>102	IFSCAL>70	DINAT<1.5	CHLA>40	SD<7
73	YON CREEK	1	GOOD Historical	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
81	TALLASSEE CREEK	1	GOOD Current	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
83	TAYLOR BRANCH	1	FAIR Historical	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
85	HERRCAVE CREEK	1	GOOD Current	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
87	QUINCY CREEK	1	GOOD Current	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
91	WEBBET BRANCH	1	FAIR Historical	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
94	HOLMAN BRANCH	1	FAIR Historical	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
96	Ochlockonee River	1	FAIR Current	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
98	WILACOOCHEE CREEK	1	GOOD Current	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-
102	SWAMP CREEK	1	FAIR Current	0	0	-	-	0	0	-	-	0	0	0	0	0	0	0	-

LEGEND:
 COND=CONDUCTIVITY
 ALK=ALKALINITY
 DO=DISSOLVED OXYGEN
 BECK-BUCK'S BIOCIC INDEX
 BIOL DIV=BIOLICAL DIVERSITY
 CHLA=CHLOROPHYLL
 HISTORICAL=1970 TO 1988
 CURRENT=1989 TO 1993
 DIAT=ARTIFICIAL SUBSTRATE DIVERSITY
 DINAT=NATURAL SUBSTRATE DIVERSITY
 TP=PHOSPHORUS
 TOT-TOTAL COLIFORM BACTERIA
 TSS-TOTAL SUSPENDED SOLIDS
 TURB-TURBIDITY
 SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03120003 OCHILOCKNEE RIVER

X =DEGRADING TREND

0 =STABLE TREND

+ =IMPROVING TREND

*. * =MISSING DATA

1984 - 1993 TRENDS

PLEASE READ THESE COLUMNS VERTICALLY

WATERSHED ID	NAME	QUALITY RANK OVER 10 MEETS OR USE ?	WQI TREND	1984 - 1993 TRENDS										
				IW	T1	T2	C1	S1	N1	P1	H1	L1	U1	S1
68	JUNIPER CREEK	PARTIAL YES	FAIR	.	.	.	.	.	.	.	.	.	.	.
71	YON CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.
81	TALLAHASSEE CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.
83	TANYARD BRANCH	PARTIAL YES	FAIR	.	.	.	.	.	.	.	.	.	.	.
85	HURRICANE CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.
87	QUINCY CREEK	YES	GOOD	0	.	.	.	0	.	0	0	.	.	+0
91	HUBBERT BRANCH	PARTIAL YES	FAIR	.	.	.	.	.	.	.	.	.	.	.
94	HOLMAN BRANCH	PARTIAL YES	FAIR	.	.	.	.	.	.	.	.	.	.	.
96	Ochlockonee River	PARTIAL YES	FAIR	+	+	+	0	0	0	0	0	0	0	.
98	WILLACOOCHEE CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.
102	SWAMP CREEK	PARTIAL YES	FAIR	.	.	.	.	.	.	.	.	.	.	.

LEGEND:

DO-SAT-DO SATURATION
ECOLI-ECOLIC COLIFORM
FLOW-FLOW
MEETS-MEETS DESIGNATED USE
PH-PH
SD-SDSCHI DISC METERS

TCOL-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS

TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORED INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

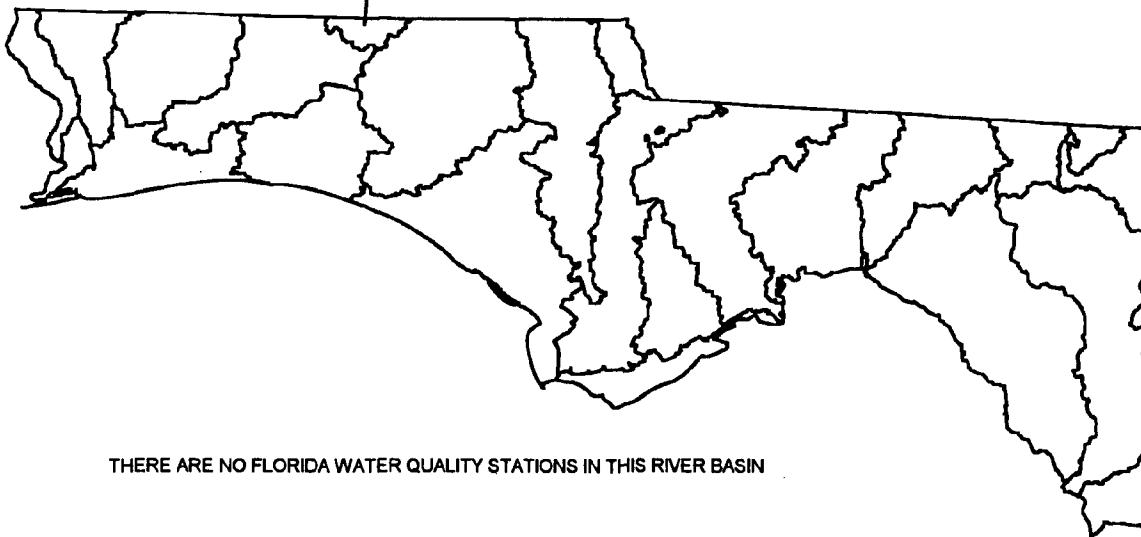
CATNAME=OCHLOCKONEE RIVER HUC=03120003

M	A	B	P	W	B	S	T	I	D	O	F	T	P	I	N	H	
A	W	B	W	W	Q	3	N	E	M	H	T	U	I	S	C	O	
P	B	S	B	W	3	0	P	N	E	E	E	V	E	D	C	H	
T	I	I	I	W	0	0	P	N	I	I	R	W	D	S	U	O	
D	N	D	D	W	5	5	S	T	A	L	E	E	R	F	C	N	
2	1297A	OCHLOCKONEE RIVER	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
15	1297B	OCHLOCKONEE RIVER	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
17	1300	TELOGIA CREEK	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
21	879	Lake Talquin	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
22*	879	HAMMOCK CREEK	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
900	UNNAMED RUN	UNNAMED RUN	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
23*	900	UNNAMED RUN	UNNAMED RUN	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
24*	902	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
25*	882	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
26*	884	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
27*	887	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
28	811	OCLAWAHNA CREEK	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
29*	860	UNNAMED RUN	UNNAMED RUN	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
30	1297D	Lake Talquin	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
32*	849	MCINTOSH BRANCH	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
33*	845	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
34*	842	TODD BRANCH	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
35*	835	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
36*	832	UNNAMED RUN	POLE BRANCH	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
37*	831	POLE BRANCH	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
38*	823	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
40*	818	UNNAMED RUN	MULE CREEK	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
41*	804	MULE CREEK	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
42*	817	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
43*	814	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
44*	816	UNNAMED RUN	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
45*	810	UNNAMED RUN	DOUBLE BRANCH	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
46*	798	DOUBLE BRANCH	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
47*	801	UNNAMED RUN	BEAR CREEK	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
48	757	BEAR CREEK	UNNAMED RUN	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
49*	796	JUNIPER BRANCH	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
51*	1304	ROCKY CONFORT CREEK	UNNAMED BRANCH	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
52*	1308	MONROE CREEK	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
54	711	MONROE CREEK	UNNAMED RUN	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
55*	737	UNNAMED RUN	OCHLOCKONEE River	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T
56	1297E	OCHLOCKONEE River	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
59	707	LITTLE RIVER	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
60*	726	UNNAMED RUN	UNNAMED RUN	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
61*	710	SWEETWATER BRANCH	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
62*	720	UNNAMED BRANCH	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
63*	1307	UNNAMED BRANCH	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
64*	707	UNNAMED RUN	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
65*	709	UNNAMED RUN	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
66*	714	UNNAMED RUN	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
67*	687	CAMP CREEK	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
68	682	JUNIPER CREEK	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
69*	691	LONG BRANCH	FAIR	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	
71*	659	UNNAMED RUN	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
72*	677	UNNAMED SLOUGH	THREAT	X	X	X	X	A	L	H	X	S	R	S	T		
73	626	YON CREEK	GOOD	THREAT	X	X	X	X	A	L	H	X	S	R	S	T	

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAP INDICATES NO STORE INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=OCHLOCKONEE RIVER HUC=03120003
(continued)

PEA RIVER BASIN
03140202



THERE ARE NO FLORIDA WATER QUALITY STATIONS IN THIS RIVER BASIN

PEA RIVER BASIN

The Pea River is an Alabama tributary of the Choctawhatchee River. Northwest Florida contains a very small portion of the Pea River basin. The only waterbody in the Florida portion of the Pea River basin is Eightmile Creek which was sampled eleven times in 1970 when it exhibited excellent water quality.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

* WATER BODY TYPE: STREAM
1 EIGHTEENMILE CREEK

WATERSHED DATA RECORD																	
WATERSHED ID	NAME	MAX OBS		BEG END DATA		TURB		WATER CLARITY									
		IR	YR	IR	YR	TSS	SD COLOR	BOD	OXYGEN DEMAND	ALKALINITY	TROPHIC STATUS						
11	70	70	Historical	10.0	-	40	-	-	6.8	25	0.36	0.03	-	-	75	29	39

** USGS HYDROLOGIC UNIT: 03140202

INDEX	GOOD	F.A.R.	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-49	60-69	70-100

WATER QUALITY INDICES									
BIOLOGICAL SPECIES DIVERSITY									
COLIFORM									
COND FLOW									
WQI: TSI									
ART	DO	DOSAT	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT
BECK	DISC	METRS	TOC	PROS	CHLA	TOC	FECL	NAT	BECK
COND	METRS	PH	ALK	TOC	TOC	COND	COND	COND	COND
FLOW	ML/L	PPM	PPM	PPM	PPM	ML/L	ML/L	ML/L	ML/L

LEGEND:
 BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
 DO-DISSOLVED OXYGEN MG/L
 CHLA-CHLOROPHYLL US/L
 COD-CHEMICAL OXYGEN DEMAND MG/L
 ART-ARTIFICIAL SUBSTRATE DI
 BEG yr-BEGINNING SAMPLING YEAR
 COLOR-COLOR PCU
 COND-CONDUCTIVITY UMHOS
 BECK-BECK'S BIOTIC INDEX
 MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-BECCHI DISC METERS
 DO-SATURATION MG/L
 DOSAT-DO % SATURATION
 END yr-ENDING YEAR
 NAT-NATURAL SUBSTRATE DIVERSITY
 NITRO-TOTAL NITROGEN MG/L
 FECLE-FECL FECAL COLIFORM MPN/100ML PH-PH STANDARD UNITS
 FLOW-FLOW CFS
 TOTAL-TOTAL COLIFORM MPN/100ML
 TSI-TROPHIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L
 TURB-TURBIDITY MG/L
 WQI-WATER QUALITY INDEX
 TOC-TOTAL ORGANIC CARBON MG/L
 PH-PH FLOW CFS
 TOTAL-TOTAL PH-PH FLOW CFS
 PH-PH STANDARD UNITS
 FECLE-FECL FECAL COLIFORM MPN/100ML
 TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140202

'X'=EXCEEDS SCREENING CRITERIA
'.'=MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID	NAME	WQI OR TSI	CURRENT OR HISTORICAL	RANK	DATA RECORD	TN	STREAM	LAKE	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM	BIOLOGICAL DIVERSITY	CHLA	SESCHI DISC
						TP	TP	TP	ALK>20	TURB>16.5	COND>1215	BOD>3.3	TOC>102	FECAL>3700	TOT>3700	DIAT>1.95	CHLA>40	SD<.7
*	WATER BODY TYPE: STREAM 1 EIGHTEENMILE CREEK					TP>4.6	TP>.12	TP>8.8	ALK>5.2	TURB>2.8	COND>1215	BOD>3.3	TOC>27.5	FECAL>470	TOT>470	DIAT<1.5	CHLA<5.5	
*	WATER BODY TYPE: STREAM 1 EIGHTEENMILE CREEK					0	0	0	0	0	0	0	0	0	0	0	0	

LEGEND:
 COND=CONDUCTIVITY
 TURB=TURBIDITY
 PH=PH
 DO=DISSOLVED OXYGEN
 DIAT=ARTIFICIAL SUBSTRATE DIVERSITY
 TN=NITROGEN
 CHLA=CHLOROPHYLL
 BOD=BIOLOGICAL DIVERSITY
 TOT=TOTAL SUSPENDED SOLIDS
 TSS=TOTAL SUSPENDED SOLIDS
 OXYGEN DEMAND=BOD, COD, TOC
 BIOL DIV=BIOLOGICAL DIVERSITY
 DINAT=NATURAL SUBSTRATE DIVERSITY
 WQI=WATER QUALITY INDEX
 TSI=TOTAL SUSPENDED SOLIDS
 WHICH INDEX USED, WQI OR TSI, IS
 BASED ON WATERBODY TYPE
 SD=SESCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

X=DEGRADING TREND
0=STABLE TREND
+=IMPROVING TREND
*.=MISSING DATA

** USGS HYDROLOGIC UNIT: 03140202

WATERSHED ID NAME
* WATER BODY TYPE: STREAM
1 EIGHTIENNILE CREEK

	YES	GOOD	1	1	1	1	1	1	1
QUALITY RANK	OVER-1Q or S1N PHD	PATTSI	BTDIDT	FITF	<-- PLEASE READ THESE COLUMNS VERTICALLY				
MEETS Q1	ALL	L	K	R	S	O	C	C	E
OR USE ?	WQI TRENDS	A	B	C	D	O	M	O	
TSI	-	-	-	-	-	I	L	P	W

DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

1984 - 1993 TRENDS

WATERSHED ID NAME
* WATER BODY TYPE: STREAM
1 EIGHTIENNILE CREEK

	YES	GOOD	1	1	1	1	1	1	1
QUALITY RANK	OVER-1Q or S1N PHD	PATTSI	BTDIDT	FITF	<-- PLEASE READ THESE COLUMNS VERTICALLY				
MEETS Q1	ALL	L	K	R	S	O	C	C	E
OR USE ?	WQI TRENDS	A	B	C	D	O	M	O	
TSI	-	-	-	-	-	I	L	P	W

DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

TCOL-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T-ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS

DO-SATURATION
FCOLL-FEICAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS

TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

LEGEND:

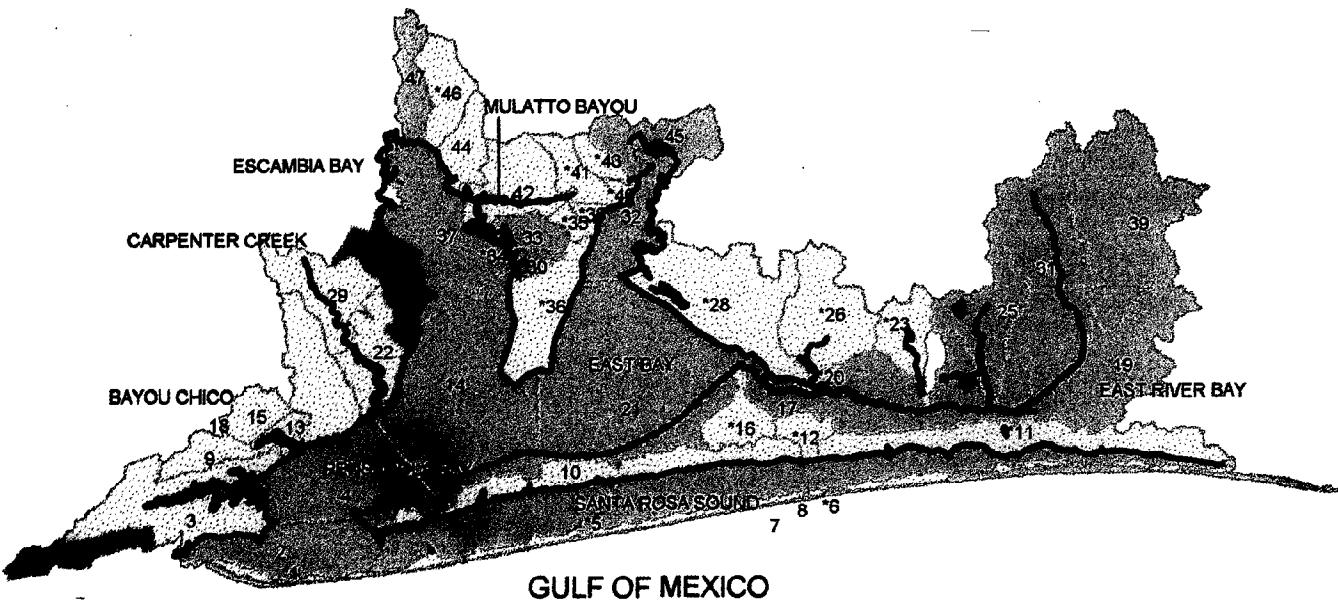
DO-DISSOLVED OXYGEN

ALK-ALKALINITY

BOD- BIOCHEM. OXYGEN DEMAND

CHLA-CHLOROPHYLL

DO-DISSOLVED OXYGEN



PENSACOLA BAY BASIN
03140105

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

Good
Threatened
Fair
Poor
Unknown



PENSACOLA BAY BASIN

Basic Facts

Drainage Area: 543 square miles

Major Land Uses: silviculture, urban development

Population Density: moderate, to high, along Bay and Gulf (Pensacola, Gulf Breeze, Ft. Walton Beach)

Major Pollution Sources: urban runoff, WWTP

Best Water Quality Areas: Santa Rosa Sound

Worst Water Quality Areas: Bayou Chico, Bayou Texar, areas assessed by nonpoint source survey

Water Quality Trends: stable quality at 7 sites

OFW Waterbodies:

Yellow River Marsh State Aquatic Preserve

Gulf Islands National Seashore

Ft. Pickens Park State Aquatic Preserve

SWIM Waterbodies: Pensacola Bay Area

Reference Reports:

Pensacola Bay SWIM Plan, NFWFMD, 1990

Bayou Texar Study, DEP (Pensacola), 1987

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

Don Ray, DEP (Pensacola), 904/444/8300

David Heil, DEP (Tallahassee), 904/488-5471

Glenn Butts, DEP (Pensacola), 904/444-8380

In the News

- * A bill that would change the boundaries of Santa Rosa and Escambia Counties, possibly allowing less restrictive coastal development, was recently passed by the Governor.
- * A controversial proposal to dig a pass through Santa Rosa Island near Navarre is being debated.
- * Several large fish kills occurred during late summer/fall of 1990 and 1991 in tributaries of Pensacola Bay.

Ecological Characterization

The Pensacola Bay Basin (located in northwest Florida) has a drainage area of 543 square miles. The basin consists of several connected waterbodies. To the west is Escambia Bay which receives flow from the Escambia River at 6,500 cfs. The Blackwater River (400 cfs) and Yellow River (1,500 cfs) empty into Blackwater Bay which widens to become East Bay. Escambia and East Bays are relatively low salinity estuaries. They merge to join the more saline Pensacola Bay waterbody which opens to the Gulf of Mexico between Perdido Key and Santa Rosa Island. Santa Rosa Sound is a lagoon between the mainland and Santa Rosa Island that receives very little freshwater input.

Most of the eastern portion of the basin consists of state forest lands and Eglin Air Force Base. The city of Milton lies at the head of Blackwater Bay. The Escambia River drains mostly silvicultural lands, but the Escambia Bay drainage contains considerable urbanization. The Pensacola Bay portion of the basin is almost entirely urbanized.

Anthropogenic Impacts

The main water quality problems in the area are upper Escambia Bay and the nearshore portions of Pensacola Bay. Additionally, Bayou Chico and Bayou Texar drain the Pensacola urban area and have pollution problems.

Water quality problems in Escambia Bay are mostly due to point sources. Reduced DO concentrations, fish kills and bacteria problems have been evident around the mouth of the Escambia River. The University of West Florida WWTP, Monsanto industrial discharge and Gulf Power thermal discharge enter the Escambia River upstream of the mouth. The University of West Florida's WWTF was issued a TOP requiring actions to be taken to either upgrade the facility to AWT or eliminate their current discharge to surface waters. In addition, this portion of the bay received discharge from two chemical manufacturing companies (CYTEC, formerly American Cyanamid, and Air products). Both discharges have been found to be toxic in several bioassay tests. Monsanto also has a history of toxicity. These companies discharge high levels of nitrogen and BOD. Problems in the upper bay were complicated by poor flushing due to natural circulation patterns and an old railroad bridge. A new railroad bridge has recently been constructed and the old one removed. Reports indicate significantly better circulation. Located on the eastern side of Escambia Bay is Mulatto Bayou which receives stormwater runoff from Avalon Beach.

Indian Bayou, in the southeastern portion of Escambia Bay, still supports a seagrass bed community.

Water quality improves in Pensacola Bay, mostly due to better flushing and the greater influence of Gulf waters. However, both nonpoint and point sources affect the bayous in Pensacola. Bayou Chico has very poor water quality. The bayou has bacteria, fish kill and nutrient problems. In addition to stormwater, it receives shipyard runoff, historic discharge from Reichold Chemicals, and the Warrington WWTP discharge. Historically, it was also degraded by chemical, lumberyard and creosote industries. Sediments are polluted with metals and support reduced macroinvertebrate life. A study of the sediments performed by the University of Florida found that various polycyclic aromatic hydrocarbons (PAH) and phenolic compounds were migrating from the American Creosote site to Pensacola Bay at the mouth of Bayou Chico (Delfino et al., 1991). The investigators also found 11 OPP's and 3 PAH's and p-chloro-m-cresol in the waters of Bayou Chico. The water concentration of tetrachloroethylene (11.5 mg/l) at one station exceeded both EPA Human Health Criteria and the FDEP Surface Water Quality criteria for Class III waters. Additionally, at two stations phenanthrene and pyrene also exceeded the EPA Human Health Criteria. The two creeks which feed this bayou (Jackson Creek and Jones Creek) also exhibit water quality problems from urban runoff. Several actions have been and are being taken to alleviate problems in Bayou Chico. Improved stormwater treatment from the shipyards, Reichold Chemicals, Corry Field (a Navy installation) and a shopping complex have been negotiated. Additionally, a sedimentation basin (funded mostly by DEP) is being constructed in one of the three arms of the bayou to capture sand and organic sediment from stormwater. The Warrington plant has upgraded its treatment and since 1990, discharges to the Main Street WWTP rather than Pensacola Bay. DEP has been conducting a survey of sediments in port areas throughout the State. This study found that sediments in the Pensacola Bay port area east of Bayou Chico were the only ones in the State to contain phenols.

Bayou Texar, although not as degraded as Bayou Chico, has had increasing fish kill problems in recent years. It receives discharge from 68 storm sewers and discharge from Carpenters Creek containing heavy suspended solids loads. Recently, the City has proposed a demonstration project (funded by DEP) to modify four of these sewers to allow partial treatment of the stormwater before entering the bayou. In addition, a study by the University of West Florida will assess the problems of the bayou and make recommendations. As part of the Pensacola Bay SWIM plan, these two bayou drainages, as well as other drainages, will be monitored to determine their pollutant loading to the bay. The summer and fall of 1991 were particularly devastating for marine life. Large fish kills occurred in both Bayous Chico and Texar. As much as 10-12 tons of fish were removed. Crabs dying in traps were found in Santa Rosa Sound. High nutrient runoff

from Tiger Point Golf Course and low dissolved oxygen levels probably contributed to the die-off of crabs.

Pensacola Bay proper also receives discharge from Pensacola's Main Street wastewater treatment plant. Two years of water chemistry samples were collected by the facility in the bay around the discharge point and at several background sites. They indicated that the bay was assimilating the current discharge but that loadings should not be increased. DEP biological sampling indicates low diversity and heavy organic sedimentation around the discharge. Furthermore, the plant has been found toxic in several bioassays.

The USEPA has research projects in Pensacola Bay including EMAP and estuarine assessments of Bayou Chico, Bayou Texar, and Bayou Grande. Sediment toxicity, chemistry and benthic macroinvertebrates are included as research parameters.

Preliminary findings has shown sediment toxicity in upper Bayou Texar below the 12th Avenue Bridge. No scientifically defensible cause and effect have been established for this observation at this time. Recent 5th year surveys for Navarre WWTP, NAS WWTP, and Main Street WWTP have not shown biological impact due to these sources, however AGP results indicate that nutrient loading to Pensacola Bay should not be increased.

Santa Rosa Sound has good water quality. It is threatened by development of the island, ditching and stormwater. Only two WWTPs currently discharge to Santa Rosa Sound, Navarre Beach and Pensacola Beach. Both facilities provide tertiary treatment prior to discharge. Finally, the City of Navarre has proposed cutting a pass (and marina) through the island.

Dissolved oxygen violations were recorded in upper Escambia Bay below industrial outfalls during April, 1994. Citizen continue to complain about dirty foam originating near these outfalls. Additional public complaints were received that the CYTEC (formerly American Cyanamid) outfall pipe had broken again.

Serious fishkills occurred in East Bay during September 1993. This area's history is similar to Bayou Texar where increased development led to increased nutrient loading which during neap tides with little wind mixing during cloudy late summer/early fall caused die off of algal blooms and fishkills. The East Bay area is developing with many waterfront home owners and the resulting nutrient laden nonpoint source runoff is beginning to contribute to the fishkills. A bridge permitted in June, 1994 to cross East Bay can be expected to exacerbate population growth in the watershed.

Mulatto Bayou has experienced turbidity, sedimentation, and habitat destruction from construction of a golf course in its headwaters. Enforcement action resulted in sediment dredging from the Bayou. Local homeowners still complain that fish and wildlife are now scarce in the bayou and blame runoff from the Moors golf course development.

Fishkills around Tiger Point golf course/WWTP in Santa Rosa Sound for summer 1993 were reported after the fact by citizens and the Gulf Islands National Seashore park supervisor.

Big Lagoon's water quality data has been added to the Perdido Bay basin section of this 305(b) report. It is an OFW with Big Lagoon State Park and Gulf Islands National Seashore Park and has the only nursery area of turtle (Thalassia) seagrass beds in Escambia Co. This area is being intensely developed with condominiums, subdivision, and marinas.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140105 PENSACOLA BAY

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN				OXYGEN DEMAND				PH ALKALINITY				TROPHIC STATUS				BIOLOGICAL SPECIES DIVERSITY				WATER QUALITY INDICES			
		#OBS	YR	MAX	MIN	BEG	END	DATA	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL FECAL	ART	BECK	COND	FLOW	WQI	TSI					
* WATER BODY TYPE: ESTUARY	PENSACOLA BAY (MOUTH)	246	71	88	Historical	6.0	3.0	11	12	8.2	91	1.0	-	4	8.1	97	0.45	0.01	2	79	5	-	-	-	4.3250	-	-	-	24				
2 BAYOU GRANDE	71	76	Historical	9.4	1.4	28	8	7.9	90	1.5	-	8.0	55	0.74	0.02	11	7	-	-	-	-	-	-	-	-	-	-	44					
3 BAYOU GRANDE	71	88	Historical	3.7	2.3	11	12	7.7	87	1.1	1050	7	6.2	93	0.40	0.01	2	28	16	-	-	-	-	-	-	-	27						
4 BAYOU GRANDE	71	88	Historical	3.7	2.3	10	11	9.7	96	0.9	-	-	26.7	99	0.40	0.00	2	9	5	-	-	-	-	-	-	-	12						
7 DIRECT RUNOFF TO GULF	72	88	Historical	3.0	3.0	25	16	0.8	-	-	-	8.0	-	0.90	0.01	2	-	-	-	-	-	-	-	-	-	-	-	18					
8 SANTA ROSA SOUND	89	89	Current	0.5	-	19	19	8.1	90	0.7	-	1	7.9	-	0.311	0.00	2	5	5	-	-	-	-	-	-	-	23						
10 DIRECT RUNOFF TO BAY	90	90	Current	2.0	1.8	10	19	8.1	90	0.7	-	1	7.8	-	0.74	0.09	11	2190	260	-	-	-	-	-	-	-	52						
11 BAYOU CHICO	89	91	Current	7.5	1.0	35	21	8.2	68	2.5	-	1	7.9	-	0.40	0.01	2	18	5	-	-	-	-	-	-	-	25						
14 PENSACOLA BAY (N)	71	88	Historical	3.7	1.9	10	15	8.2	89	0.8	-	7	7.9	10.1	-	-	-	-	-	-	-	-	-	-	-	-	25						
17 DIRECT RUNOFF TO BAY	71	80	Historical	11.0	0.8	25	11	4.9	64	1.5	-	7.5	38	0.59	0.02	6	49	7	-	-	-	-	-	-	-	45							
18 BAYOU GRANDE	89	92	Current	4.4	1.0	33	15	3.9	42	0.6	-	3	7.0	0.54	0.04	900	193	-	-	-	-	-	-	-	-	44							
19 EAST RIVER BAY	90	93	Current	21.0	-	16	7.3	84	-	-	-	5.2	6	0.56	0.02	-	-	-	-	-	-	-	-	-	-	-	37						
21 EAST BAY	91	92	Current	6.5	1.6	34	16	7.4	79	0.3	-	3	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	46						
22 TEXAR BAYOU	89	92	Current	2.6	1.5	21	6	6.2	65	0.5	-	2	6.7	-	1.09	0.08	3	2791	590	-	-	-	-	-	-	-	56						
24 ESCAMBIA BAY (S)	70	88	Historical	11.3	0.9	40	28	7.9	86	1.1	333	6	7.9	-	0.59	0.02	3	24	18	-	-	-	-	-	-	-	41						
30 TROUT BAYOU	9	92	Current	7.1	0.8	70	8	4.1	49	-	-	6	6.6	10	0.63	0.02	3	2000	1000	-	-	-	-	-	-	-	43						
32 BLACKWATER BAY	92	93	Current	8.4	1.1	40	12	8.4	88	-	-	5	6.8	13	0.48	0.01	1	84	-	-	-	-	-	-	-	34							
33 INDIAN BAYOU	9	92	Current	7.5	1.0	60	10	5.5	66	-	-	6	6.9	11	0.53	0.02	5	210	20	-	-	-	-	-	-	45							
37 ESCAMBIA BAY (N)	89	93	Current	5.0	0.9	40	12	7.3	87	1.5	-	3	7.4	-	0.63	0.03	7	20	10	-	-	-	-	-	-	48							
42 MULATO BAYOU	90	92	Current	23.0	0.5	120	14	4.7	57	-	-	11	6.5	6	0.66	0.02	10	230	700	-	-	-	-	-	-	-	55						
44 JUDGES BAYOU	9	92	Current	11.0	0.9	75	9	5.8	72	-	-	6	7.0	20	0.71	0.02	18	700	100	-	-	-	-	-	-	-	53						
.45 BLACKWATER BAY	94	92	Current	3.1	1.5	35	3	8.6	92	-	-	3	6.7	9	0.53	0.01	2	35	-	-	-	-	-	-	-	32							
* WATER BODY TYPE: STREAM	JONES CREEK	89	92	Current	5.7	1.0	60	5	3.9	41	0.8	-	7	6.6	-	1.11	0.26	2	3750	743	-	-	-	-	-	-	-	56					
15 JACKSON CREEK	89	92	Current	2.1	1.0	16	4	6.1	65	0.7	-	2	5.8	1	0.16	0.02	1	8700	658	-	-	-	-	-	-	-	49						
25 PRAIRIE CREEK	6	92	Current	1.0	0.6	15	1	8.6	88	-	-	1	6.7	1	0.88	0.06	1	2475	681	-	-	-	-	-	-	-	16						
29 CARPENTER CREEK	89	92	Current	3.5	2.0	36	5	7.7	80	0.5	-	2	5.4	1	0.24	0.02	1	100	-	-	-	-	-	-	-	127							
31 LIVE OAK CREEK	6	92	Current	2.6	1.0	10	4	8.7	93	-	-	1	5.6	1	0.24	0.02	1	13	-	-	-	-	-	-	-	30							
39 TURTLE CREEK	6	92	Current	1.3	0.9	10	9	9.1	99	-	-	1	5.6	1	0.24	0.02	1	46	-	-	-	-	-	-	-	19							
47 PACE MILL CREEK	94	71	Historical	15.5	0.8	58	7	7.0	76	1.0	193	7	6.8	18	0.75	0.05	2	953	260	-	-	-	-	-	-	-	12						
																												40					

* WATER BODY TYPE: STREAM

DO-DISSOLVED OXYGEN MG/L

CHLA-CHLOROPHYLL UG/L

COD-CHEMICAL OXYGEN DEMAND MG/L

END-YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU

BECK-BIOTIC INDEX

COND-CONDUTIVITY UMHOS

FLOW-FLOW CMS

MAX #OBS-MAXIMUM NUMBER OF SAMPLES

SD-SECCI DISC METERS

TOC-TOTAL ORGANIC CARBON MG/L

NAT-NATURAL SUBSTRATE DIVERSITY

NITRO-TOTAL NITROGEN MG/L

TSI-TROPIC STATE INDEX

PH-PH STANDARD UNITS

POPS-TOTAL PHOSPHORUS MPN/100ML

COND-CONDUTIVITY UMHOS

TSS-TOTAL SUSPENDED SOLIDS MG/L

LEGEND:
ALK-ALKALINITY MG/L DO-DISSOLVED OXYGEN MG/L TURB-TURBIDITY MG/L
ART-ARTIFICIAL SUBSTRATE DI SATURATION WQI-WATER QUALITY INDEX
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU
COND-CONDUTIVITY UMHOS
BRICK-BIOTIC INDEX
FLOW-FLOW CMS

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 0314 0105 PENSACOLA BAY

*=EXCEEDS SCREENING CRITERIA
'=WITHIN SCREENING CRITERIA
'=MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID NAME	RANK	DATA RECORD	TN	STREAM	LAKE	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTERIUM	BIOL DIV	CHLA	SEUCHI DISC
			TN>2.0	TP>.46	TP>.12	PH>8.8	ALK>20	TURB>16.5 COND>1275	TSS>18	TOD>3700	DIARK<1.95	CHLA>40	FECAL>470	DINAT<1.5
* WATER BODY TYPE: ESTUARY														
2 PENSACOLA BAY (MOUTH)	GOOD	Historical	0	-	0	0	0	0	0	0	x	0	0	0
3 BAYOU GRANDE	GOOD	Historical	0	-	0	0	0	0	0	0	0	0	0	0
4 PENSACOLA BAY (MID)	GOOD	Historical	0	-	0	0	0	0	0	0	x	0	0	0
7 DIRECT RUNOFF TO GULF	GOOD	Historical	0	-	0	x	0	0	0	0	0	0	0	0
8 SANTA ROSA SOUND	GOOD	Current	0	-	0	0	0	0	0	0	0	0	0	0
10 DIRECT RUNOFF TO BAY	GOOD	Current	0	-	x	0	0	0	0	0	x	0	0	0
13 BAYOU CHICO	GOOD	Historical	0	-	0	0	0	0	0	0	0	0	0	0
14 PENSACOLA BAY (N)	GOOD	Historical	0	-	0	0	0	0	0	0	0	0	0	0
17 DIRECT RUNOFF TO BAY	GOOD	Historical	0	-	0	0	0	0	0	0	0	0	0	0
18 BAYOU GRANDE	FAIR	Historical	0	-	0	0	0	0	0	0	x	0	0	0
19 EAST RIVER BAY	GOOD	Current	0	-	0	0	x	0	0	0	0	0	0	0
21 EAST BAY	GOOD	Current	0	-	0	0	0	0	0	0	x	0	0	0
22 TEXAR BAYOU	FAIR	Current	0	-	0	0	0	0	0	0	x	0	0	0
24 ESCAMBIA BAY (S)	GOOD	Historical	0	-	0	0	x	0	0	0	0	0	0	0
30 TROUT BAYOU	GOOD	Current	0	-	0	0	x	0	0	0	x	0	0	0
32 BLACKWATER BAY	GOOD	Current	0	-	0	0	x	0	0	0	0	0	0	0
33 INDIAN BAYOU	GOOD	Current	0	-	0	0	x	0	0	0	0	0	0	0
37 ESCAMBIA BAY (N)	GOOD	Current	0	-	0	0	0	0	0	0	x	0	0	0
42 MULAITO BAYOU	FAIR	Current	0	-	0	0	x	0	0	0	x	0	0	0
44 JUDGES BAYOU	FAIR	Current	0	-	0	0	x	0	0	0	x	0	0	0
45 BLACKWATER BAY	GOOD	Current	0	-	0	0	x	0	0	0	x	0	0	0
* WATER BODY TYPE: STREAM														
9 JONES CREEK	FAIR	Current	0	-	0	-	0	-	0	-	x	0	-	0
15 JACKSON CREEK	FAIR	Current	x	-	0	-	0	-	0	-	0	0	-	0
25 PRAIRIE CREEK	GOOD	Current	0	-	0	x	0	-	0	-	0	0	-	x
29 CARMENTER CREEK	FAIR	Current	0	-	0	0	0	-	0	-	0	0	-	0
31 LIVE OAK CREEK	GOOD	Current	0	-	0	x	0	-	0	-	0	0	-	0
39 TURTLE CREEK	GOOD	Current	0	-	0	x	0	-	0	-	0	0	-	0
47 PACE MILL CREEK	GOOD	Historical	0	-	0	x	0	-	0	-	x	0	-	0

LEGEND:
COND-CONDUCTIVITY
ALK-ALKALINITY
DO-DISSOLVED OXYGEN
BECK-BECK'S BIONIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL

FECAL-FEICAL COLIFORM BACTERIA
HISTORICAL-1970 to 1988
CURRENT-1989 to 1993
DIAT-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
TP-PHOSPHORUS
TOD-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TN-NITROGEN

SEUCHI DISC
SD-SBUCHI DISC METERS

WQI OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WQI OR TSI, IS
BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-CLOUDS-CLEANUP

** USGS HYDROLOGIC UNIT: 03140105 PENSACOLA BAY

*=DEGRADING TREND

0'=STABLE TREND

+ =IMPROVING TREND

---=MISSING DATA

1984 - 1993 TRENDS

OVER-1Q or S1 T1 C1 F1 T1 B1 D1 T1 F1 <-- PLEASE READ THESE COLUMNS VERTICALLY

ALL 1Q N P H D H L U S O O O C C E L

WQI D C I S I Q M O

A L I P W

T I I

DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

* WATER BODY TYPE: ESTUARY

WATERSHED ID	NAME	QUALITY RANK	MEETS OR USE ?	TSI	TREND	WQI	OVER-1Q	N P H D	H L U S	O O C C E L	K R S I D C I S I Q M O	A L I P W	T I I	
2	PENSACOLA BAY (MOUTH)	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
3	BAYOU GRANDE (MID)	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
4	PENSACOLA BAY (MID)	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
7	DIRECT RISOFF TO GULF	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
8	SANTA ROSA SOUND	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
10	DIRECT RISOFF TO BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
13	BAYOU CH CO	PARTIAL	FAIR	0	0 0	0	0 0	x	0 0	0	0 0	0	0 0	0
14	PENSACOLA BAY (N)	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
17	DIRECT RISOFF TO BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
18	BAYOU GRANDE	YES	FAIR	0	x 0	-	0	-	0 0	0	0 0	0	0 0	-
19	EAST RIVER BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
21	EAST BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
22	TEXAS BAYOU	PARTIAL	FAIR	0	0 0	-	0	-	0 0	+	0	0	0 0	-
24	ESCARZA BAY (S)	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
30	TROUT BAYOU	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
32	BLACKWATER BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
33	INDIAN BAYOU	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
37	ESCARZA BAY (N)	YES	GOOD	0	0 0 0	0	0 0	0	0 0	+	0	0	-	-
42	MULATIO BAYOU	PARTIAL	FAIR	-	-	-	-	-	-	-	-	-	-	-
44	JUDGES BAYOU	PARTIAL	FAIR	-	-	-	-	-	-	-	-	-	-	-
45	BLACKWATER BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-

* WATER BODY TYPE: STREAM

9	JONES CREEK	PARTIAL	FAIR	0	0 0	-	0	-	0 0	0	0 0	0 0	0	-
15	JACKSON CREEK	PARTIAL	FAIR	0	x 0	-	0	-	0 0	0	0 0	0 0	0	-
25	PRALIE CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
29	CARPENTER CREEK	YES	FAIR	0	0 0	-	+	-	0 0	+	x x	0 0	x	-
31	LIVE OAK CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
39	TURTLE CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-
47	PACE MILL CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-

LEGEND:
DO-SAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
DO-DISSOLVED OXYGEN

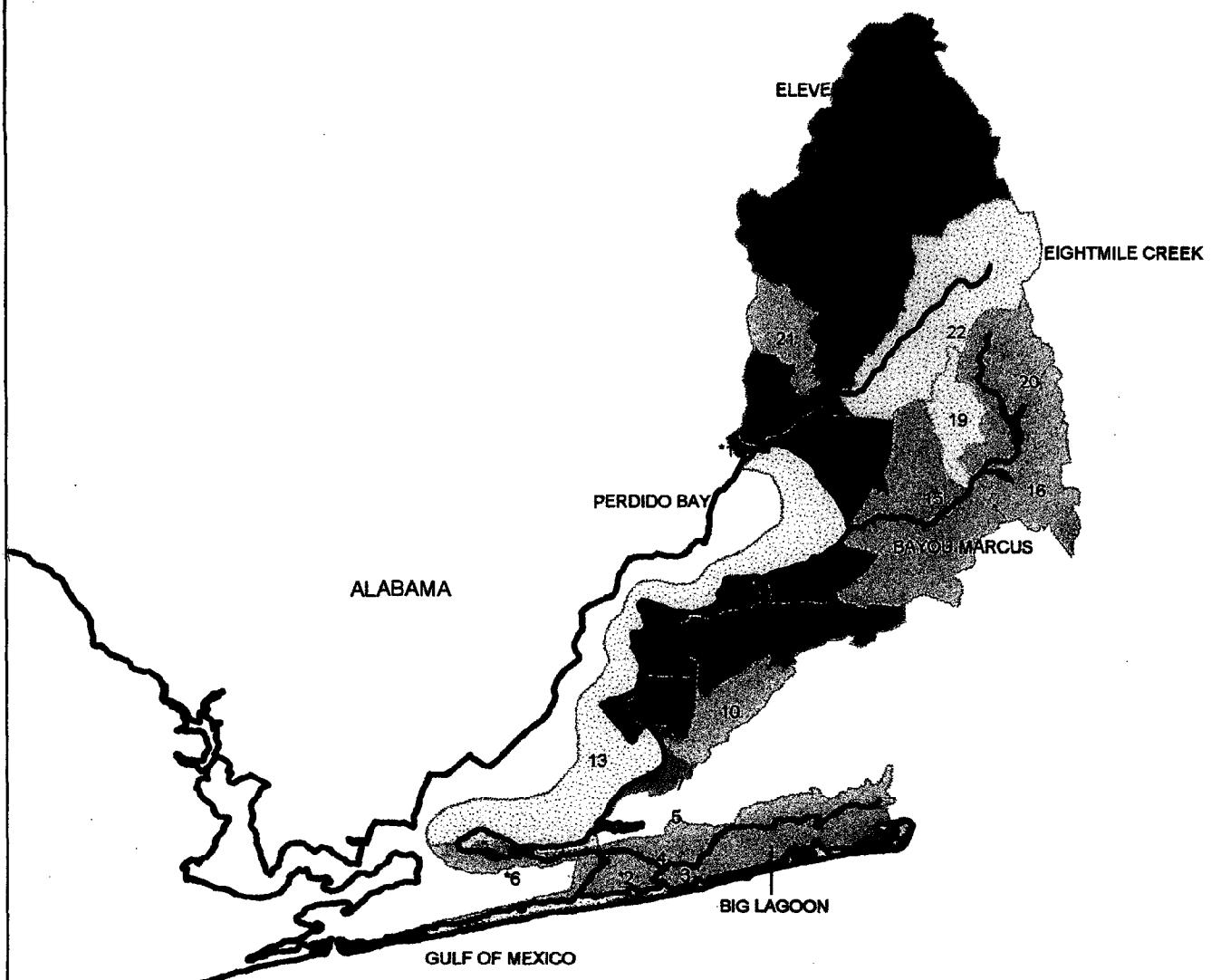
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T-ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS

TURB-TURBIDITY
TSI-TROPHIC STATUS INDEX FOR LAKES AND ESTUARIES
WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORE INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=PENSACOLA BAY HUC=031410105

M	A	P	W	B	S	I	D	N	Q	W	Q	N	P	O	F	T	P	I	U	R	S	N	H	E	T	F	O	
1*	1007																											
5*	893																											
6*	925																											
7	930																											
9	24																											
9	JONES CREEK																											
10	834																											
11*	870																											
12*	164																											
13	846																											
15	846B																											
16*	833																											
17	829																											
18	740																											
19	701																											
20*	825																											
22	738																											
23*	736																											
25	PANTHER CREEK																											
26*	685																											
27*	683																											
28*	639																											
29	663																											
30	676																											
31	694																											
32	LIVE OAK CREEK																											
33	649																											
34*	666																											
35*	635																											
36*	669																											
38*	637																											
39	510																											
40*	600																											
41*	537																											
42	539																											
43*	534																											
44	493																											
45	502																											
46*	444																											
47	420																											



PERDIDO BAY BASIN

Basic Facts

Drainage Area: 350 square miles

Major Land Uses: forest, urban development

Population Density: moderate around coastal areas (West Pensacola, Gulf Beach, Avondale)

Major Pollution Sources: pulp mill, urban runoff

Best Water Quality Areas: Marcus Creek, Eight Mile Creek

Worst Water Quality Areas: Elevenmile Creek, Perdido Bay near mouth of Eleven Mile Creek, Bridge Creek

Water Quality Trends: stable water quality at 2 sites, improving quality at Eleven Mile Creek, and Marcus Creek

OFW Waterbodies:

Gulf Islands National Seashore

Ft. Pickens Park State Aquatic Preserve

SWIM Waterbodies: none

Reference Reports:

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

Don Ray, DEP (Pensacola), 904/444-8340

David Heil, DEP (Tallahassee), 904/488-5471

Glenn Butts, DEP (Pensacola) 904/444-8380

In the News

* Champion Paper Corp. has implemented new treatment methods for decreasing color in discharge water.

* Perdido Bay Cooperative Management Study for development of a Bay management plan is near completion.

* Health advisories recommending against consumption of fish because of high dioxin concentration have been issued for Elevenmile Creek.

Ecological Characterization

Perdido Bay is a relatively small Florida estuary (50 square miles) with an immediate drainage area of approximately 300 square miles. The center line of the bay forms the state boundary line between Alabama and Florida, with each state sharing approximately half of the basin drainage area. The Perdido River is the major freshwater inflow to the bay with an average annual flow of 700 cfs. Florida land use in the immediate drainage basin is primarily forest though a portion is rapidly becoming urbanized (western edge of Pensacola). The Alabama side has agriculture as well as silviculture.

Because of its small, "off-center" inlet from the Gulf, the bay is subject to rapid water quality changes depending on rainfall, wind and tidal effects. After rainy periods and with north winds, the bay experiences extreme outflowing currents, rapid flushing and low salinities. During low rainfall, low wind periods, the bay is very poorly flushed, thus concentrating pollutant inputs.

Anthropogenic Impacts

The most concentrated and voluminous pollution source in the basin is the Champion Paper Company (formerly the St. Regis Paper Company) which discharges 28 MGD of treated pulp mill effluent into Elevenmile Creek, making up most of its flow at its headwaters. The historical record shows that the creek has had major water quality problems since the early 1970s. After the installation of a treatment facility at St. Regis Paper Company, water quality parameters showed improvement in the mid-1970s; however, in the mid-1980s Champion changed production methods to include a bleaching process. This change required a new permit. In the summer of 1987, the company applied for an operating permit and for variances in zinc, iron, lead, specific conductivity and transparency. The permit was contested by a local environmental group. After lengthy administrative hearings, and under a complicated Consent Order requiring studies of both treatment processes and water quality impacts, a five year temporary operation permit with the variances was issued in December 1989.

The discharge negatively affects many in-stream water quality parameters, particularly biological integrity, color, DO, BOD, nutrients, turbidity and solids. Of the 81 STORET samples from the creek taken in the last ten (10) years, the median value for DO was 3.4 mg/l which is below the state criterion of 5 mg/l for Class III waters. Dissolved oxygen violations were recorded for Perdido Bay and ElevenMile Creek during the spring of 1994. The Department continues to receive many water quality complaints for Perdido Bay. Complaints from ElevenMile Creek below the papermill now include mats of duckweed flowing downstream which appear to be from changes in the mill wastewater treatment process. The poor water quality throughout the creek is reflected in low density, diversity and species richness values for benthic fauna. The company is investigating the possibility of going to land application rather than direct discharge. This

should improve water quality, but would have a pronounced effect on flow in the creek. In the meantime, Champion has invested in numerous studies and treatment methods. One report indicated a 70% reduction in effluent color and further color removal studies are being conducted. Treatments to reduce color are likely to have positive effects on BOD and other parameters.

Other dischargers to Elevenmile Creek included the Silver Lake WWTP and the Cantonment WWTP. Silver Lake WWTF is no longer in operation. Flows were diverted to the Escambia County Utility Authority facility in January, 1994. The Cantonment WWTF has been notified of a no discharge WLA. A TOP is in effect requiring diversion of flows to the Avondale WWTF and the elimination of their discharge to ElevenMile Creek by February 1998. The Cantonment WWTP discharges just above the Champion discharge.

In the last several years, a number of studies have been initiated by DEP (CZM), EPA, Alabama Department of Environmental Management, Fish and Wildlife Service, and Champion to investigate the effects of Elevenmile Creek and other tributaries on the bay itself. This is a difficult question to answer because of the overwhelming influence of the Perdido River (relative to the unusual flushing characteristics of the bay (sometimes very rapid, sometimes slow), and the extreme variability of the bay itself. The DEP (CZM) study indicates that Elevenmile Creek currently contributes approximately 30% of the nutrients and only 10% of the freshwater input to the Bay, and that the excess carbon contributed by Elevenmile Creek may exacerbate seasonal low DOs in the bay. Overall, however, it is still unclear from the DEP (CZM) and Champion studies if the creek has significant long term deleterious effects in the bay. Additionally, a sampling of 48 fish (several species) from the bay were found to have normal liver histopathology by EPA (Gulf Breeze). Work on fish fillet dioxin concentrations by the EPA resulted in advisories being issued urging no consumption of fish from Elevenmile Creek. Fish fillets sampled exceeded EPA recommended maximum levels of 7 parts-per-trillion of dioxin. Another study of the bay's ecology has been performed by EPA (Athens). The Perdido Bay Cooperative Management Study will make a comprehensive assessment of all the studies and identify specific management strategies for improvements to the bay. This study is nearing completion.

Upper Perdido Bay also receives drainage from Eightmile Creek and Bayou Marcus which receive runoff from urbanized areas and have elevated water quality index values. In addition, the Avondale WWTP discharges to Bayou Marcus. The Avondale WWTP was upgraded to AWT in 1989 which improved the downstream water quality of Bayou Marcus. Avondale WWTF was issued a construction permit in June 1994 to expand the facility from 2.0 MGD to 7.1 MGD and to dispose of its effluent to a wetland adjacent to Bayou Marcus AWT. Construction is to be completed prior to March 1997. Stormwater continues to be a pollution source to the bayou and the bay from a variety of nonpoint

sources. The Florida side contributes mostly urban and construction stormwater, whereas the Alabama side has more agricultural runoff.

Bayou Garcon, in the southern portion of the bay, exhibits transparency and DO problems. In addition, there have been local reports of increased siltation at the mouth of the bayou which was attributed to new development in the watershed area. Within the last few years, there has been an increase in development in the swampy areas west of Pensacola. During rainy seasons, runoff from these developments can affect much of the eastern portions of the bay. The runoff problem is a major concern because the bay studies indicate that the lower bay is also susceptible to sediment and water pollution.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140107 PERDIDO BAY

WATERSHED ID	NAME	WATERSHED DATA RECORD										WATER CLARITY										WATER QUALITY									
		BEG YR	END YR	#OBS	PERIOD	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	OXYGEN DEMAND	ALKALINITY	PH	ALK	NITRO PROS	CHLA	TOTAL FEC.	NAT	ART	BECK	COND	FLOW	WQI	TSI			
* WATER BODY TYPE: ESTUARY																															
3	DIRECT RUNOFF TO BAY	5	72	72	Historical	22.5	5.4	93	5.0	*	8.2	84	1.70	0.04	*	1	*	*	*	*	*	*	*	*	*	*	50	*			
4	BIG LAGOON	3	69	89	Current	0.5	1.2	16	6.7	79	1.1	*	7.7	0.77	0.01	2	5	*	*	*	*	*	*	*	*	*	35	*			
5	DIRECT RUNOFF TO BAY	3	92	92	Current	2.5	1.5	10	22	3.0	31	0.7	*	8.0	0.55	0.03	25	8	*	*	*	*	*	*	*	*	46	*			
13	PERDIDO BAY	47	69	93	Current	5.0	0.8	50	11	7.9	85	1.6	*	5	7.3	64	0.96	0.03	6	40	5	*	*	*	*	*	51	*			
* WATER BODY TYPE: STREAM																															
10	UNNAMED STREAM	3	92	92	Current	2.5	1.0	85	3	2.5	25	0.5	*	6	6.2	0.66	0.02	500	88	*	*	*	*	*	*	*	3700	*			
12	BRIDGE CREEK	13	72	88	Historical	205.5	1.2	64	1260	4.4	54	15.1	*	7.0	53	15.03	0.69	540	*	*	*	*	*	*	*	*	15350	*			
15	MARCUS CREEK	38	89	92	Current	2.9	*	23	3	6.9	70	0.4	*	3	6.4	0.70	0.03	2	916	111	*	*	*	*	*	*	*	1311	*		
16	BELLSHEAD BRANCH	6	92	92	Historical	3.4	0.6	60	2	6.1	76	*	4	6.9	1.2	0.29	0.01	20	36	*	*	*	*	*	*	*	58	*			
19	TURNER CREEK	14	72	75	Historical	14.0	*	65	*	5.8	59	1.8	*	7.5	11	1.02	0.02	730	*	*	*	*	*	*	*	64	*				
20	UNNAMED BRANCH	9	89	92	Current	2.5	*	45	3	6.7	71	0.5	*	6	6.7	*	0.97	0.10	578	90	*	*	*	*	*	*	1590	*			
21	HURST BRANCH	6	91	91	Current	6.5	*	70	3	6.2	65	1.4	*	8	5.9	*	0.34	0.04	2500	1170	*	*	*	*	*	*	130	41			
22	EIGHTMILE CREEK	18	89	92	Current	17.2	*	60	3	6.1	63	0.5	*	7	6.7	*	1.18	0.10	770	100	*	*	*	*	*	*	347	*			
23	ELEVENMILE CREEK	81	89	92	Current	27.0	0.2	188	28	3.4	41	8.0	*	37	7.5	266	5.02	0.29	2	463	153	*	*	*	*	*	1263	*			

INDEX

WQI-RIVER 0-44 45-59 60-90
TSI-ESTUARY 0-49 50-53 50-100
TSI-LAKE 0-59 60-69 70-100

WATER
QUALITY
INDICES

BIOLOGICAL
SPECIES
DIVERSITY
WATER
CLARITY
COND.
FLOW
TURBIDITY
WQI
TOC-TOTAL ORGANIC CARBON MG/L
NITRO-TOTAL NITROGEN MG/L
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L

LEGEND:
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL ug/L
COD-CHEMICAL OXYGEN DEMAND MG/L
END YR-BEGINNING SAMPLING YEAR
FEC-FECAI FLOW CFS
PH-PH STANDARD UNITS
TSS-CONDUCTIVITY UHSOS
BECK-BECK'S BIOTIC INDEX

MAX #OBS-MAXIMUM NUMBER OF SAMPLES
SD-SECCI DISC METERS
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

MAX #TSS-MAXIMUM NUMBER OF SAMPLES
SD-SECCI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
NITRO-TOTAL NITROGEN MG/L
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140107 PERDIDO BAY

'X' = EXCEEDS SCREENING CRITERIA
'-' = MISSING DATA

* WATERSHED SCREENING CRITERIA

WATERSHED ID	NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	ALK	TURB & TS	COND TS	OXYGEN DEMAND	DO	COLIFORM BACTERIA	BIOLOGICAL DIVERSITY	CHLA CHLOROPHYLL A	SECCHE DISC METERS
				TN>2.0	TP>.46	TP>.12	ALK>.8	PH>5.2	TURB>16.5	COND>1275	BOD>3.3	DO<4	TOT>3700	DIAT>1.95	CHLA>40	SD<.7
* WATER BODY TYPE: ESTUARY															
3	DIRECT RUNOFF TO BAY	1	FAIR Historical	0	-	0	-	0	-	x	0	1	0	-	-
4	BIG LAGOON	1	GOOD Current	0	-	0	-	0	-	x	0	0	-	0	0
5	DIRECT RUNOFF TO BAY	1	GOOD Current	0	-	0	-	0	-	x	0	0	-	0	0
13	PERDIDO BAY	1	FAIR Current	0	-	0	-	0	-	x	0	1	0	-	0
* WATER BODY TYPE: STREAM															
10	UNNAMED STREAM	1	GOOD Current	0	-	0	-	0	-	x	0	1	0	-	-
12	BRIDGE CREEK	1	POOR Historical	x	-	x	-	0	-	x	0	0	-	0	0
15	MARCUS CREEK	1	GOOD Current	0	-	0	-	0	-	x	0	0	-	0	0
16	BILLHEAD BRANCH	1	GOOD Current	0	-	0	-	0	-	x	0	0	-	0	x
19	TURNER CREEK	1	FAIR Historical	0	-	0	-	0	-	x	0	0	-	0	-
20	UNNAMED BRANCH	1	GOOD Current	0	-	0	-	0	-	x	0	0	-	0	-
21	HOBST BRANCH	1	GOOD Current	0	-	0	-	0	-	x	0	0	-	0	-
22	EIGHTMILE CREEK	1	FAIR Current	0	-	0	-	0	-	x	0	0	-	0	-
23	ELEVENMILE CREEK	1	POOR Current	x	-	0	-	0	-	x	0	0	-	0	x

LEGEND:
 CONDUCTIVITY
 ALK-ALKALINITY
 DO-DISSOLVED OXYGEN
 BECK-BECK'S BOTTIC INDEX
 BIOL DIV-BIOLOGICAL DIVERSITY
 CHLA-CHLOROPHYLL A
 FECAL-FEICAL COLIFORM BACTERIA
 HISTORICAL-1970 TO 1988
 OXYGEN DEMAND-BOD, COD, TOC
 PH-PH
 TOT-TOTAL SUSPENDED SOLIDS
 TURB-TURBIDITY
 TN-NITROGEN
 TP-PHOSPHORUS
 TOT-TOTAL COLIFORM BACTERIA
 WHICH INDEX USED, MOI OR TSI, IS
 BASED ON WATERBODY TYPE
 SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03140107 PERDIDO BAY

*=DEBRADING TREND

*=STABLE TREND

+ = IMPROVING TREND

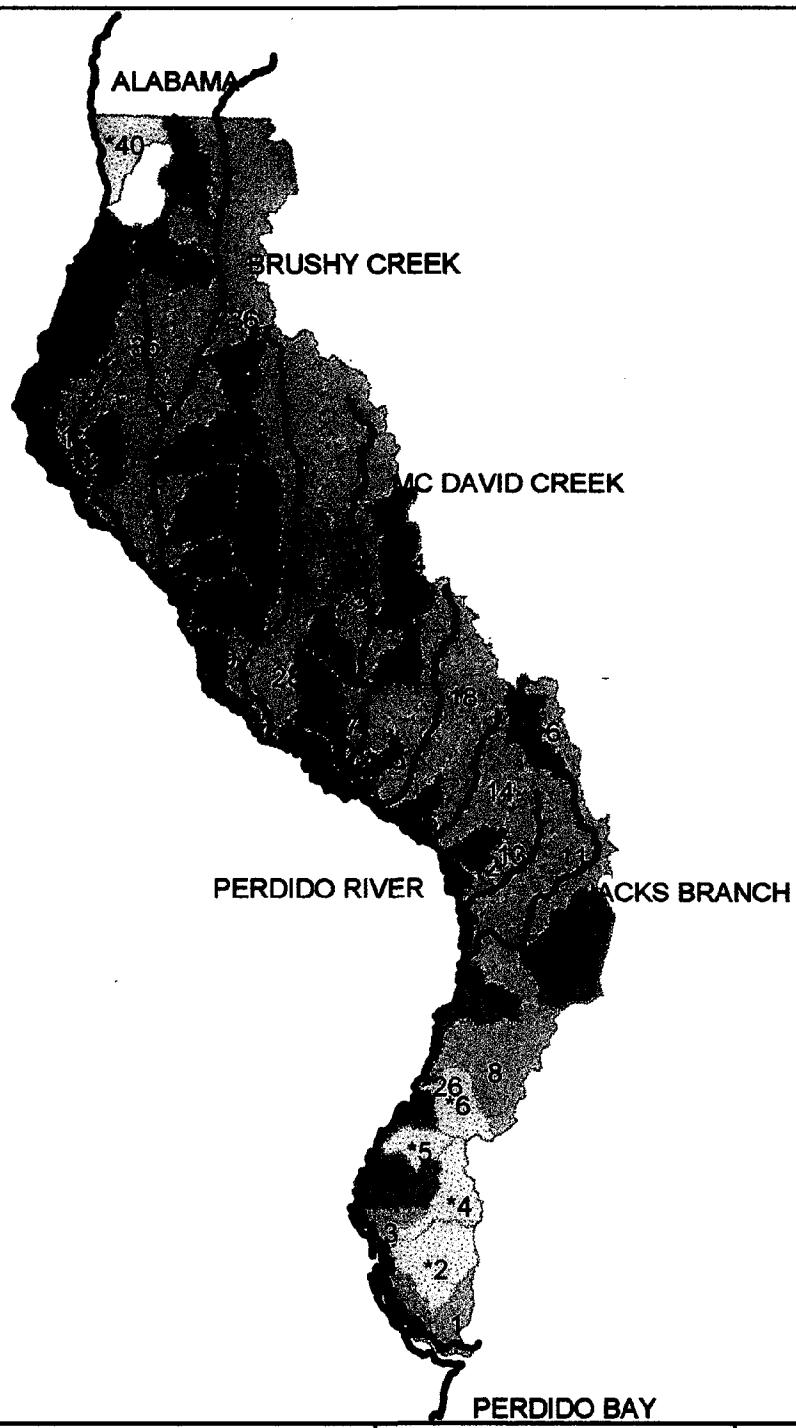
. = MISSING DATA

WATERSHED ID	NAME	QUALITY RANK	1984 - 1993 TRENDS												<--- PLEASE READ THESE COLUMNS VERTICALLY	
			W	T	T	C	S	P	A	T	B	T	D	D	F	<---
3	DIRECT RUNOFF TO BAY	OVER-1Q or S	I	I	I	I	I	I	I	I	I	I	I	I	I	PLEASE READ THESE COLUMNS VERTICALLY
4	BIG LAGOON	ALL	I	I	I	I	I	I	I	I	I	I	I	I	I	
5	DIRECT RUNOFF TO BAY	WOI (TRENDS)	A	A	A	A	A	A	A	A	A	A	A	A	A	
13	PERDIDO BAY	MEETS OR USE ?	TS1	-	-	-	-	-	-	-	-	-	-	-	-	
*	WATER BODY TYPE: ESTUARY															
3	DIRECT RUNOFF TO BAY	PARTIAL	FAIR	-	-	-	-	-	-	-	-	-	-	-	-	
4	BIG LAGOON	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	
5	DIRECT RUNOFF TO BAY	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	
13	PERDIDO BAY	PARTIAL	FAIR	0	0	0	0	0	0	0	0	0	0	0	0	
*	WATER BODY TYPE: STREAM															
10	UNNAMED STREAM	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	
11	BRIDGE CREEK	NO	POOR	-	-	-	-	-	-	-	-	-	-	-	-	
12	MARCUS CREEK	YES	GOOD	+	+	+	+	0	0	0	+	+	0	+	0	
15	BELLSHEAD BRANCH	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	
16	TURNER CREEK	PARTIAL	FAIR	-	-	-	-	-	-	-	-	-	-	-	-	
19	UNNAMED BRANCH	YES	GOOD	+	+	0	0	0	0	0	0	+	+	0	0	
20	HORST BRANCH	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	
21	EIGHTMILE CREEK	YES	FAIR	0	0	0	0	0	0	0	0	0	0	0	x	
22	ELEVENMILE CREEK	YES	GOOD	-	-	-	-	-	-	-	-	-	-	-	-	
23	ELEVENMILE CREEK	NO	POOR	+	0	0	0	0	0	0	0	0	0	0	+	0

LEGEND:
 DO-SATURATION
 DO-DO SATURATION
 FCOLI-FCAL. COLIFORM
 FLOW-FLOW
 MEETS USE-MEETS DESIGNATED USE
 PH-PH
 SD-SECCHI DISC METERS
 TSI-TOTAL COLIFORM
 TEMP-TEMPERATURE
 TN-NITROGEN
 TOC-T.ORGANIC CARBON
 TP-PHOSPHORUS
 TSS-TOTAL SUSPENDED SOLIDS
 TS-TURBIDITY
 TSI-TROPIC STATE INDEX FOR LAKES AND ESTUARIES
 WOI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE + ON MAP ID INDICATES NO STORE™ INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

ט' טבת תשע"ג - 21 בדצמבר 2013



**PERDIDO RIVER BASIN
03140106**

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT



PERDIDO RIVER BASIN

Basic Facts

Drainage Area: 913 square miles (about 25% in Florida)

Major Land Uses: forest, agriculture, wetlands

Population Density: low, no major population centers in Florida

Major Pollution Sources: industrial sources in Alabama

Best Water Quality Areas: Perdido River

Worst Water Quality Areas: no significant problem areas

Water Quality Trends: stable quality at 3 sites, improvement at Lower Perdido River

OFW Waterbodies: Perdido River

SWIM Waterbodies: none

Reference Reports:

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

Gray Bass, FFWFC, 904/957-4172

Don Ray, DEP (Pensacola), 904/444-8300

In the News

- * A citizens action group (Friends of Perdido Bay) is seeking congressional action to designate the Perdido River under the Wild and Scenic Rivers Act.
 - * Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for the Perdido River.
-

Ecological Characterization

The Perdido River forms the boundary between Florida and Alabama. The basin's drainage area is 913 square miles, of which only 25% is located in Florida. The river is blackwater in nature and meanders through mostly sand and gravel substrate. The river discharges at about 700 cfs into Perdido Bay and is estuarine and tidal in its lowest reach. The basin is mostly forested, and silviculture is the primary land use in Florida; however, the upper basin contains significant agricultural lands. There is little urban area within the basin.

Anthropogenic Impacts

Water quality in the upper basin is generally good. All stream reaches meet their designated use. One historical problem area in the basin is Jacks Branch. In the early 1980s, there was some hazardous waste contamination from Dubose Oil Company to Jacks Branch. Since that time the State and EPA have contained this pollution source and are involved in the cleanup process.

The lower river reaches are affected by water from Perdido Bay. The lower river is considered fair to poor by district personnel, exhibiting very low bottom DO levels and concomitant low benthic diversity values.

Specific problems that have occurred are as follows. The Perdido Landfill had water quality violations of turbidity, fecal and total coliforms, and pH, in tributaries emptying into the Perdido River. In addition, 28 acres of jurisdictional wetlands were filled without a permit. Escambia County signed a Consent Order and agreed to pay FDEP expenses, fund an environmental education project, release 183 acres for a conservation easement on property between Perdido Landfill and the Perdido, restore disturbed wetlands, and submit a Surface Water Assessment Plan for the facility. A criminal investigation of the Perdido landfill was conducted during 1993/4 by EPA. State monitoring found a contaminated stream flowing off the property with very low diversity and an altered community structure dominated by bloodworms. A background tributary just upstream was clear with a diverse benthic community with fish, stoneflies, and mayflies etc.

Boggy Creek has severe erosion problems from historical silviculture activities as reported by the Soil Conservation Service. The water body is a candidate site for FDEP's Pollution Recovery Trust Fund.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140106 PERDIDO RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD			WATER CLARITY			DISSOLVED OXYGEN			OXYGEN DEMAND			PH ALKALINITY			TROPHIC STATUS			BIOMASS DIVERSITY			WATER QUALITY INDICES					
		MAX	BEG	END	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PROS	CHLA	TOTAL	FECI	NAT	ART	BECK	COND	FLOW	WQI	TSI	
*	WATER BODY TYPE: STREAM																											
1	PEDIDO RIVER	82	89	92	Current	3.4	1.3	49	8	6.9	73	0.4	5	6.5	12	0.65	0.03	2	216	38	-	-	-	-	-	29	-	
3	PEDIDO RIVER	45	89	93	Current	3.5	1.1	45	3	8.2	86	0.3	4	5.6	1	0.47	0.02	2	213	75	-	-	-	-	-	20	-	
7	PEDIDO RIVER	10	92	93	Current	2.7	0.9	25	2	8.2	82	-	2	6.4	2	0.44	0.01	93	-	-	-	-	-	-	16	-		
8	JACKS BRANCH	10	89	92	Current	3.5	1.0	50	6	5.5	64	1.0	-	5.2	-	0.54	0.01	2	400	30	-	-	-	-	-	30	-	
9	PEDIDO RIVER	28	89	93	Current	2.7	0.8	45	3	7.8	82	0.3	-	4	5.4	1	0.51	0.03	2	155	30	-	-	-	-	-	15	-
11	JACKS BRANCH	6	92	93	Current	9.2	0.7	75	3	4.9	52	-	-	7	5.8	-	0.36	0.01	-	60	84	-	-	-	-	-	34	-
13	CONDEVIL CREEK	7	92	92	Current	1.2	0.3	10	1	9.3	90	-	-	1	5.5	1	1.01	0.01	-	28	46	-	-	-	-	-	12	-
14	PENASULA CREEK	8	92	93	Current	3.4	0.6	50	2	7.6	81	-	-	6	5.8	1	0.46	0.01	-	275	-	-	-	-	-	-	27	-
18	ALLIGATOR CREEK	7	92	92	Current	1.4	0.4	18	1	8.8	91	-	-	1	5.8	1	1.07	0.01	-	230	98	-	-	-	-	-	29	-
25	MC DAVID CREEK	6	92	92	Current	4.3	0.7	30	3	8.0	85	-	-	3	5.3	4	0.24	0.01	-	76	60	-	-	-	-	-	19	-
28	BOGGY CREEK	6	92	93	Current	6.5	0.6	33	4	7.8	82	-	-	2	6.0	2	0.57	0.01	-	90	108	-	-	-	-	-	23	-
29	HELVENSON CREEK	6	92	92	Current	2.8	0.6	60	2	5.5	60	-	-	9	4.9	1	0.30	0.01	-	60	26	-	-	-	-	-	23	-
35	FREEMAN SPRINGS BRANCH	6	92	92	Current	1.9	0.3	40	2	3.9	45	-	-	5	5.0	1	0.21	0.01	-	20	14	-	-	-	-	-	23	-
36	BRUSHY CREEK	12	89	92	Current	4.1	.	31	4	7.7	80	0.2	-	3	6.2	-	0.87	0.11	-	336	43	-	-	-	-	-	26	-

INDEX --- GOOD FAIR POOR
WQI-RIVER 0-44 45-59 60-90
TSI-ESTUARY 0-19 50-59 60-100
TSI-LAKE 0-59 60-69 70-100

LEGEND:
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L DO-DO % SATURATION
CHLA-CHLOROPHYLL AUS/L COD-CHEMICAL OXYGEN DEMAND MG/L END yr-ENDING YEAR
ART-ARTIFICIAL SUBSTRATE DI COLOR-COLOR PCU FECI-FEICAL COLIFORM MPN/100ML PH-PH STANDARD UNITS
BEG yr-BEGINNING SAMPLING YEAR COND-CONDUTIVITY UMHOS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX FLOW-FLOW CFS TSS-TOTAL SUSPENDED SOLIDS MG/L

MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
NITRO-NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX TSII-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140106 PERDIDO RIVER

* =EXCEEDS SCREENING CRITERIA
* =MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID	NAME	RANK	DATA RECORD	TN	STREAM	LAKE	PH	ALK	COND TSS	TURB 4	OXYGEN DEMAND	DO	COLIFORM BAC.	BIOL DIV	CHLA	SECCHE DISC
+ WATER BODY TYPE: STREAM																
1	PERDIDO RIVER	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
3	PERDIDO RIVER	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
7	PERDIDO RIVER	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
8	JACKS BRANCH	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
9	PERDIDO RIVER	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
11	JACKS BRANCH	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
13	COMDEVIL CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
14	PENASULA CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
18	ALLIGATOR CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
25	MC DAVID CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
28	BOGGY CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
29	HELLERSON CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
35	FREEMAN SPRINGS BRANCH	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0
36	BRUSHY CREEK	1	GOOD Current	0	0	0	0	0	0	x	0	0	0	0	0	0

LEGEND:
 COND=CONDUCTIVITY
 ALK=ALKALINITY
 BECK-BUCK'S BIOTIC INDEX
 BIOL DIV=BIOLOGICAL DIVERSITY
 CHLA=CHLOROPHYLL
 DO=DISSOLVED OXYGEN
 CURRENT=1983 TO 1993
 DIAT=ARTIFICIAL SUBSTRATE DIVERSITY
 DINAT=NATURAL SUBSTRATE DIVERSITY
 TP=PHOSPHORUS
 HISTORICAL=1970 TO 1983
 OXYGEN DEMAND=BOD₅, COD, TOC
 PH-PH
 TSS-TOTAL SUSPENDED SOLIDS
 TURB-TURBIDITY
 TN-NITROGEN
 SD=SECCHE DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

* = DEGRADING TREND

+ = STABLE TREND

- = IMPROVING TREND

, = MISSING DATA

** USGS HYDROLOGIC UNIT: 03140106 PERDIDO RIVER

1984 - 1993 TRENDS

WATERSHED ID NAME	WQI TREND	MEETS OR USE ?	TSI	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS												<--- PLEASE READ THESE COLUMNS VERTICALLY	
				W	T	T	C	S	P	A	T	B	T	D	D	F	<--- PLEASE READ THESE COLUMNS VERTICALLY
1 PERDIDO RIVER	YES	GOOD	+	+	+	+	0	0	+	0	0	0	0	+	+	+	
3 PERDIDO RIVER	YES	GOOD	+	+	+	+	0	x	0	0	0	0	0	+	0	0	
7 PERDIDO RIVER	YES	GOOD	+	+	+	+	0	0	0	0	0	0	0	+	0	0	
8 JACKS BRANCH	YES	GOOD	+	+	+	+	0	0	0	0	0	0	0	+	0	0	
9 PERDIDO RIVER	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11 JACKS BRANCH	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13 CODEVIL CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14 PENINSULA CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18 ALLIGATOR CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25 MC DAVID CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28 BOGGY CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
29 HELVERSON CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
35 FREEMAN SPRINGS BRANCH	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36 BRUSHY CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* WATER BODY TYPE: STREAM

1 PERDIDO RIVER	YES	GOOD	+	+	+	+	0	0	+	0	0	0	0	+	+	+	
3 PERDIDO RIVER	YES	GOOD	+	+	+	+	0	x	0	0	0	0	0	+	0	0	
7 PERDIDO RIVER	YES	GOOD	+	+	+	+	0	0	0	0	0	0	0	+	0	0	
8 JACKS BRANCH	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9 PERDIDO RIVER	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11 JACKS BRANCH	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13 CODEVIL CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14 PENINSULA CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18 ALLIGATOR CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25 MC DAVID CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28 BOGGY CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
29 HELVERSON CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
35 FREEMAN SPRINGS BRANCH	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36 BRUSHY CREEK	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

LEGEND:

- DOSAT=DO SATURATION
- ECOLI=FAecal COLIFORM
- FLOW-FLOW
- MEETS=MEETS DESIGNATED USE
- PH-PH
- SD=SECCHEI DISC METERS
- ALK-ALKALINITY
- OD-BIOTIC DEMAND
- CHLA-CHLOROPHYLL
- DO-DISSOLVED OXYGEN

TCOLL=TOTAL COLIFORM

TEMP-TEMPERATURE

TN-NITROGEN

TOC-T.ORGANIC CARBON

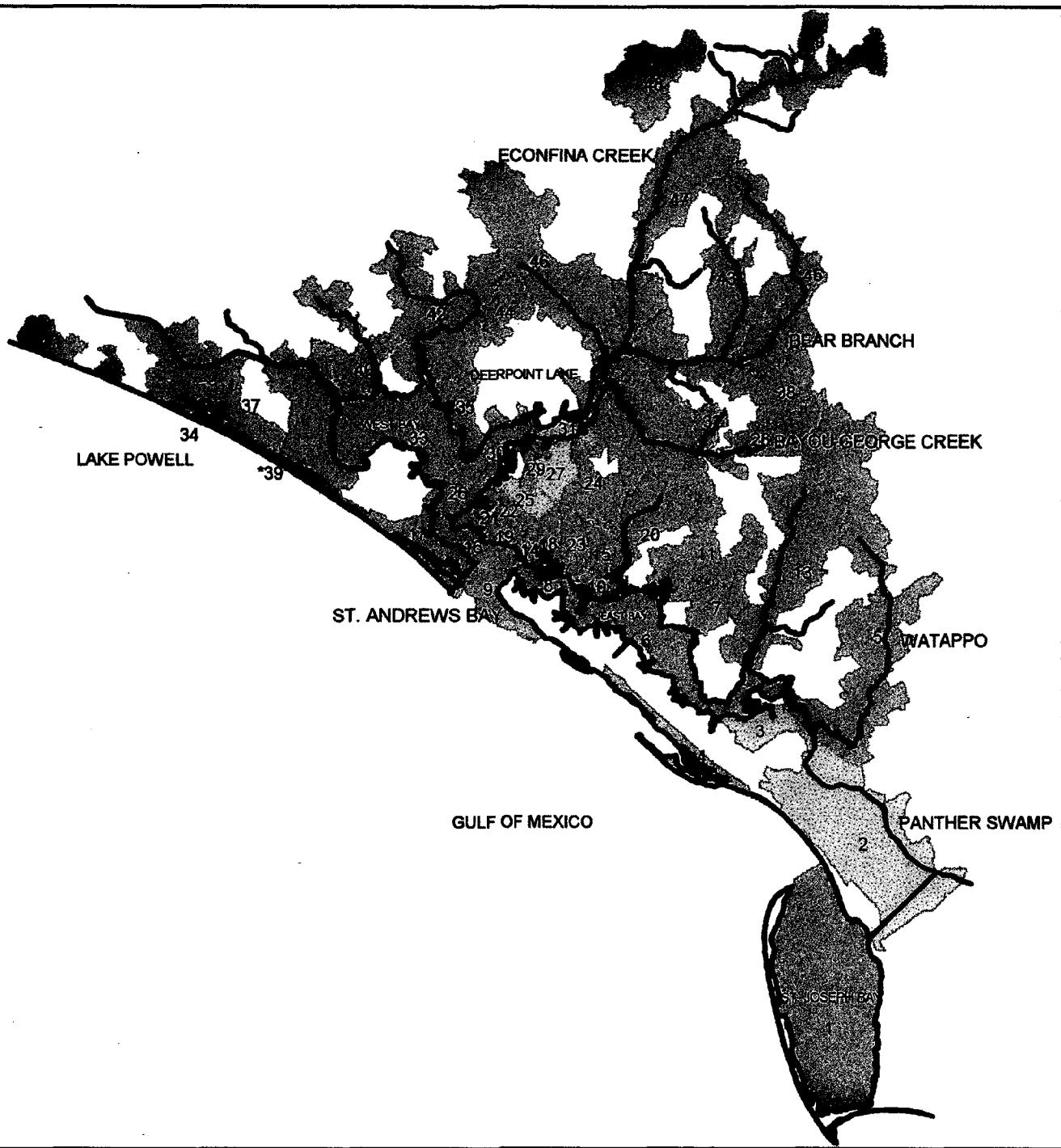
TP-PHOSPHORUS

TSS-TOTAL SUSPENDED SOLIDS

TURB-TURBIDITY

TSI-TROPHIC STATUS INDEX FOR LAKES AND ESTUARIES

WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS



ST. ANDREWS BAY BASIN
03140101

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



ST. ANDREWS BAY BASIN

Basic Facts

Drainage Area: 1,350 square miles

Major Land Uses: forest, urban development

Population Density: low, moderate around Bay (Panama City, Lynn Haven
Tyndall Air Force Base)

Major Pollution Sources: paper mills, WWTP, urban runoff

Best Water Quality Areas: Econfina Creek, Sandy Creek

Worst Water Quality Areas: Panther Swamp, Beatty BAYOU

Water Quality Trends: stable quality at 2 sites, improvement at
Econfina Creek

OFW Waterbodies:

St. Joseph Bay State Aquatic Preserve

St. Andrews State Park Aquatic Preserve

Lake Powell

SWIM Waterbodies: Deer Point Lake

Reference Reports:

Deer Point Lake SWIM Plan, NFWFMD, 1991

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

David Heil, DEP (Tallahassee), 904/488-5471

Don Ray, DEP (Pensacola), 904/444-8300

Glenn Butts, DEP (Pensacola) 904/444-8380

In the News

- * The dredging operation at Military Point Lagoon has been completed. The lagoon, which serves Bay County, the Four City Sewer System, Tyndall Air Force Base, Stone Container Corporation and Panama City was cleared of a large buildup of sludge. Biochemical oxygen demand has been reduced by 50 percent.
- * Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for Deer Point Lake and Econfina Creek.

- * A notice of violation was given to Bay County for 66 sites because of stormwater runoff caused erosion and sedimentation into waters of the State.
 - * A die-back of salt marsh cordgrass has been occurring along the inner perimeter of the St. Andrews Bay.
 - * Stone Container pulpmill will be closed most of the summer (1994) due to an industrial accident.
-

Ecological Characterization

St. Andrews Bay Basin encompasses a large bi-lobed embayment on the panhandle of Florida. To the west of the inlet, West Bay and North Bay form one lobe. On the southeast is St. Andrews Bay proper, and East Bay forms the other lobe. Panama City lies between the lobes. The basin also includes the long stretch of coast enclosing St. Andrews Sound, and the large, open St. Joseph's Bay. The major freshwater inflow into the bay complex is the Econfina River, entering at North Bay. The northernmost bayou where this spring-fed river enters the bay is impounded to form the freshwater lake, Deer Point Lake, which is the drinking water source for Panama City. Other freshwater drainages into the bay are small, mostly blackwater creeks draining forest and swamp land. St. Josephs Bay, in the southern part of the basin, is distinctly different from the dark brackish waters of West, North and East Bays. It is essentially composed of the clear, saline waters of the Gulf of Mexico, and is separated from the Gulf by a thin dune line. There are no major freshwater inflows; however, the brackish Gulf County Canal connects the bay to the Intracoastal Waterway.

The entire basin drains a total area of about 1,350 square miles. The watershed is primarily forested with an urbanized area concentrated adjacent to St. Andrews Bay. The major urban centers are Panama City, Lynn Haven and a narrow strip of development along the gulf. Except for these urban areas, the primary land use is silviculture.

Anthropogenic Impacts

The St. Andrews Bay system generally exhibits good water quality. The major river inflow, Econfina Creek, is nearly pristine, and most of the urbanized area is concentrated where the bay is better flushed by the Gulf. However, the Bay is threatened, not only by the growth-induced nonpoint source pollution, but also by several important domestic and industrial point sources.

There are several areas of concern in the basin. Deer Point Lake is the drinking water source for Panama City. Although its major inflow is from Econfina Creek, its other tributaries have some pollution impacts. Bayou George Creek has the Majette Landfill located in its watershed. In a 1987 study, Pond C effluent to the creek had significant amounts of ammonia and unionized ammonia. The creek below the landfill had elevated nutrients and specific conductance, and the macroinvertebrate community was depressed. Perhaps most threatening to the lake itself is the impact from recreation activities and shoreline development. Boating docks and facilities, construction activities, and residential development runoff add fertilizer, sediment and oils and grease to the watershed. The lake has severe weed problems which were treated by both the State and private citizens with herbicides in the seventies. Chemical treatment has been replaced by biological controls (grass carp). Sampling in 1989 indicated elevated values for some metals in the sediments near the dam and depauperate benthic fauna and low diversities in the mid- to lower lake. Water quality sampling indicates low DO values and some bacteria problems. Deer Point Lake is a priority SWIM waterbody and plans were developed for its conservation and restoration including a careful study of the nonpoint pollution sources in the watershed.

Nonpoint source pollution also affects several of the urban creeks and bayous. In addition, Beatty Bayou below the impoundment was affected by the Lynn Haven WWTP sprayfields. The plant diverted it's flows to the Bay County WWTP in April, 1994. Watson Bayou, in Panama City, also suffers from historical WWTP discharge and urban runoff. A major fish kill in the summer/fall of 1991 was linked to leaking sewage lines and a sewage discharge from the Millville WWTP. The Nonpoint Source Assessment indicates some metals contamination of that waterbody. A study performed by NOAA's National Status and Trends Program found high concentrations of lead, mercury, DDT, chlordane, PCB's, and polycyclic aromatic hydrocarbons in sediments from Watson Bayou. West Bay in the vicinity of the Panama City Beach WWTP, is also showing water quality problems with decreased DO values. Panama City Beach's recent application for an operating permit renewal was denied based on their current discharge to Class II waters. This denial is currently in the hearing mode. It is anticipated that the matter will be resolved through a temporary operating permit requiring appropriate actions to be taken to eliminate any further discharges to their present location. Finally, the St. Andrews WWTP which handles wastewater from Panama City appears to be affecting the sediments and biological richness in the vicinity of its outfall in St. Andrews Bay. St. Andrews WWTP will be required to upgrade to AWT when their current permit expires in 1997.

The most significant point source problems in the basin are treatment plants that receive more industrial wastes than domestic. The Bay County Regional WWTP treats industrial

wastewater from Stone Container (paper/pulp mill) and Arizona Chemicals Company (a resin processor) as well as domestic wastewater from several small communities. The Bay County facility and the industries have jointly signed a Consent Order requiring better treatment and outlining the financial penalties for non-compliance. St. Andrews Bay, in the vicinity of the outfall at Military Point, indicates biological degradation with poor diversity and productivity. The sediments in the vicinity of the outfall have high BOD and are rich in organics.

The City of Port St. Joe WWTP (in Gulf County) treats wastewater from St. Joe Forest Products (paper/pulp mill). Premier Services Corporation (formerly known as Basic Magnesia, Inc.) treats wastes from its magnesium operation. The WWTP plant discharges enter the Gulf County Canal near the St. Josephs Bay where it becomes diluted with good quality bay water. However, in the vicinity of the canal, sediments are mucky instead of sandy and seagrass coverage is decreased due to the poorer transparency of the waters. Both Bay Count and City of Port St. Joe WWTP facilities discharge at about 30 MGD (of which 80-90% is from the paper companies). Both are publicly owned treatment plants that mutually benefit the paper companies and the counties (by virtue of having the industrial development). Both of the receiving bays show biological degradation and shifts in sediment composition. The WWTP's have applied for a TOP (temporary operating permit) which will require them to address current discharge problems resulting from high pH and TSS.

Lake Powell is ecologically interesting in that it has characteristics of both freshwater and saltwater lakes. It is also in relatively pristine condition; however, it is currently undergoing rapid development. The utmost care should be taken to prevent stormwater pollution in this sensitive area. It was recently designated as Outstanding Florida Waters.

Other pollution sources in this basin include many small package plants and septic tanks which discharge poorly treated waste into ditches emptying into the St. Andrews Bay, significant amounts of highway and construction site runoff, and runoff from logging operations.

Venture Out WWTP (currently discharging directly to St. Andrews Bay) will connect to Panama City Beach by November, 1994. Pride Resorts WWTP (currently discharging to Alligator Bayou) was issued a TOP in January 1994 requiring it to tie-in to the Panama City Beach WWTP or upgrade to AWT by October, 1994.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1988-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140101 ST ANDREWS BAY

WATERSHED DATA RECORD

WATERSHED ID NAME	MAX #OBS	BIG END YR	END YR	PERIOD	WATER CLARITY			DISSOLVED OXYGEN			PH ALK			TROPHIC STATUS			BIOLOGICAL SPECIES DIVERSITY			WATER QUALITY INDICES							
					TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO PHOS	CHLA	COLIFORM	COND	FLOW	BECK	COND	FLOW	WQI	TSI			
* WATER BODY TYPE: ESTUARY																											
1 ST. JOSEPH BAY	6	92	92	Current	1.8	0.5	20	17	5.6	70	-	-	5	8.0	89	0.54	0.02	6	3000	156	-	-	40538	52			
2 PANTHER SWAMP	20	92	93	Current	10.0	0.4	140	8	6.5	72	-	-	14	7.4	76	0.57	0.06	2	-	25	-	-	-	25100	56		
3 WALKER BAYOU	4	73	73	Historical	1.5	1.5	12	8.3	88	0.6	-	-	8.0	-	5.37	0.03	25	5	-	-	-	-	-	32300	52		
4 DIRECT RUNOFF TO GULF	4	71	71	Historical	9.0	1.3	8	6.3	1.02	0.3	-	-	8.8	1	0.69	0.01	7	1	-	-	-	-	-	-	12		
6 EAST BAY (E)	32	71	88	Historical	2.5	2.5	20	6	6.1	74	1.1	-	8.2	91	0.62	0.01	7	26	8	3.6	-	-	-	41800	32		
7 CALIFORNIA BAYOU	7	92	92	Current	7.6	1.0	30	7.3	83	1.4	-	-	5	7.7	74	0.57	0.02	4	2	-	-	-	-	-	31500	46	
8 EAST BAY (W)	88	71	87	Historical	7.0	1.6	16	1.2	6.5	73	1.4	-	8.0	100	0.58	0.02	37	94	13	-	-	-	-	-	32300	36	
9 ST. ANDREWS BAY (MOUTH)	16	73	87	Historical	2.5	37.7	11	24	8.4	96	0.9	-	26.4	100	0.30	0.02	16	10	5	-	-	-	-	-	47350	31	
10 PITTS BAY	17	72	88	Historical	3.2	1.9	30	12	4.5	57	1.8	-	7.9	99	0.52	0.01	7	182	1085	-	-	-	-	-	41975	24	
11 LARD BAYOU	8	72	73	Historical	26.5	3.4	31	7.0	79	1.6	-	-	8.2	100	0.61	0.04	35	411	-	-	-	-	-	-	19069	43	
12 DIRECT RUNOFF TO BAY	16	89	93	Current	2.0	60	52	6.8	77	31.8	189	-	6.7	101	0.40	0.02	2	2	1600	1050	-	-	-	-	-	2041	37
14 MASSALINA BAYOU	16	92	93	Current	1.8	1.5	13	5.8	62	1.5	-	4	8.0	101	0.40	0.02	2	8	-	-	-	-	-	-	40350	41	
15 PARKER BAY	25	71	73	Historical	12.0	43	127	4.6	56	1.8	1460	-	7.9	73	0.88	0.03	230	-	-	-	-	-	-	-	34750	41	
16 ST. ANDREWS BAY (M)	118	74	86	Historical	2.0	3.0	15	5	8.8	90	0.8	-	4	8.0	108	0.36	0.02	3	5	4	4.2	3.2	-	-	42500	25	
17 WOODLAWN CANAL	197	74	74	Historical	1.4	1	5	5.2	63	-	-	-	8	7.4	70	0.40	0.03	73	28	-	-	-	-	-	-	37	
18 WAYSON BAYOU	46	91	93	Historical	4.7	9.9	25	19	5.8	70	4.7	-	4	7.8	107	0.57	0.04	11	1300	28	-	-	-	-	-	40200	49
19 DIRECT RUNOFF TO BAY	17	73	87	Historical	3.5	2.9	30	15	7.6	81	0.5	-	7.9	-	0.38	0.01	33	113	5	-	-	-	-	-	-	44250	35
21 PRETTY BAYOU	167	74	74	Historical	2.7	-	4.5	5.6	-	-	-	-	10	7.0	0.37	0.09	7	1	-	-	-	-	-	-	31775	37	
22 ROBINSON BAYOU	6	73	79	Historical	1.3	1.6	10	6.6	76	1.3	-	-	8.0	84	0.59	0.04	20	1	-	-	-	-	-	-	24865	28	
24 MILL BAYOU	6	73	74	Historical	2.2	1.6	14	30	7.0	83	1.8	-	7.4	65	0.56	0.03	152	-	-	-	-	-	-	-	22623	46	
25 GOOSE BAYOU	6	73	73	Historical	2.0	0	8	30	7.0	83	1.1	-	8.2	78	0.88	0.03	96	-	-	-	-	-	-	-	410000	53	
26 ST. ANDREWS BAY (N)	54	71	98	Historical	3.7	1.8	18	14	8.3	94	0.6	-	7.7	85	0.49	0.02	2	14	5	-	-	-	-	-	410000	35	
27 BEAUTY BAYOU	16	92	93	Current	5.1	0.9	45	5	5.4	56	-	-	8	7.0	81	2.48	0.77	2	305	-	-	-	-	-	-	9205	55
29 DIRECT RUNOFF TO BAY	13	71	74	Historical	3.0	1.6	15	5	7.3	83	1.1	-	7.8	78	0.58	0.03	95	74	-	-	-	-	-	-	31775	39	
30 NORTH BAY (N)	26	73	76	Historical	3.0	2.1	10	14	7.3	83	1.1	-	8.0	70	0.63	0.02	83	10	5	-	-	-	-	-	35150	37	
31 NORTH BAY (N)	14	73	73	Historical	4.0	2.1	15	77	7.2	90	1.6	-	8.0	65	0.73	0.03	71	6	-	-	-	-	-	-	38425	50	
33 WEST BAY	37	89	93	Current	2.5	1.7	18	19	8.3	83	0.7	-	3	7.6	86	0.41	0.03	3	5	5	-	-	-	-	38200	38	
35 DIRECT RUNOFF TO BAY	6	72	72	Historical	10.5	-	23	-	5.1	71	1.5	-	8.4	93	1.11	0.04	1	-	-	-	-	-	-	46			
* WATER BODY TYPE: LAKE																											
34 LAKE POWELL	7	72	72	Historical	30.0	1.5	30	1	6.6	78	1.5	-	6.4	90	1.12	0.01	17	-	-	-	-	-	-	-	24		
36 DEERPOINT LAKE	12	89	89	Current	2.5	1.5	60	3	7.5	87	0.6	-	6.6	32	0.32	0.01	2	51	8	-	-	-	-	-	33		
41 WESTERN LAKE OUTLET	3	80	80	Historical	1.5	150	-	-	-	-	-	-	6.6	21	0.28	0.01	2	-	-	-	-	-	-	-	4540	26	
44 MERRIL LAKE	32	79	80	Historical	2.0	2.7	3	-	-	-	-	-	8.3	96	0.69	0.02	1	-	-	-	-	-	-	-	106		
48 L. GAP POND	3	80	80	Historical	1.0	4.5	4	-	-	-	-	-	5.1	1	0.31	0.01	2	-	-	-	-	-	-	-	13		
49 COMPASS LAKE OUTLET	34	79	79	Historical	1.0	4.3	-	-	9.1	88	-	-	5.1	-	0.25	0.03	-	-	-	-	-	-	-	18			
* WATER BODY TYPE: STREAM																											
5 WATAPPO	6	92	92	Current	8.0	0.6	80	4	7.9	85	-	-	6	7.0	4	0.37	0.02	40	-	-	-	-	-	-	22		
13 SANDY CREEK	5	92	93	Current	2.7	0.6	30	2	8.3	89	-	-	3	6.3	5	0.13	0.01	33	-	-	-	-	-	-	30		

LEGEND:
 ALK-ALKALINITY MG/L
 ART-ARTIFICIAL SUBSTRATE DI
 BEG-YR-BEGINNING SAMPLING YEAR
 BECK-BECK'S BIOTIC INDEX
 COLOR-COLOR PCU
 COND-CONDUCTIVITY UMHOS
 DO-DISSOLVED OXYGEN DEMAND MG/L
 CHLA-CHLOROPHYLL USE/L
 COD-CHEMICAL OXYGEN DEMAND MG/L
 FECI-FECAL COLIFORM MPN/100ML
 FLOW-FLOW CFS
 MAX #OBS-MAXIMUM NUMBER OF SAMPLES
 SD-SECCHI DISC METERS
 END YR-ENDING YEAR
 FECI-FECAL COLIFORM MPN/100ML
 TOTAL-TOTAL ORGANIC CARBON MG/L
 NITRO-NITROGEN MG/L
 PH-PH STANDARD UNITS
 TSS-TOTAL SUSPENDED SOLIDS MG/L
 TURB-TURBIDITY MG/L
 WQI-WATER QUALITY INDEX
 TSI-TROPIC STATE INDEX
 TSST-L-SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03140101 ST ANDREWS BAY

WATERSHED ID	NAME	WATERSHED DATA RECORD										WATER CLARITY										DISSOLVED OXYGEN DEMAND										PH ALKALINITY										TROPHIC STATUS										BIOLOGICAL DIVERSITY										WATER QUALITY INDICES									
		MAX #OBS	BEG YR	END YR	PERIOD	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO PHOS	CHLA	TOTAL FECAL	NAT	ART	BECK	COND	FLOW	WTI	TSI																																														
20	CALLOWAY CREEK	4	92	92	Current	3.5	0.2	50	1	6.3	65	0.8	*	3	5.7	1	0.17	0.02	*	*	*	*	32	*	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																											
23	LAKE MARTIN BAYOU	67	72	74	Historical	27.0	*	88	4	8.2	89	0.8	*	*	4.3	10	1.36	0.05	*	1301	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																										
28	BAYOU GEORGE CREEK	11	89	93	Current	7.4	0.8	100	2	6.5	70	0.9	*	10	6.5	24	0.45	0.01	2	280	84	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																											
32	BEFFWOOD BRANCH	8	92	93	Current	2.8	0.6	110	1	7.2	74	*	*	11	4.9	2	0.37	0.01	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																													
37	DIRECT RUNOFF TO BAY	10	71	73	Historical	28.3	1.6	25	24	8.4	90	0.9	*	*	8.4	94	1.17	0.01	36	49	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																													
38	SO FX LITTLE BEAR CK	7	92	93	Current	2.8	0.5	40	1	8.4	84	*	*	5	6.4	14	0.22	0.01	*	123	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																													
40	CROOKED CREEK	10	92	93	Current	1.1	2.0	40	2	4.2	43	*	*	5	5.9	10	0.23	0.01	*	48	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																														
42	BURN MILL CREEK	6	89	92	Current	1.1	1.0	58	9	6.5	74	0.6	*	5	6.9	9	0.54	0.02	2	130	40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																														
43	BEAR BRANCH	3	89	89	Current	3.0	1.8	40	3	6.8	68	0.6	*	*	6.1	19	0.4	0.02	2	190	30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																														
45	LITTLE BEAR CREEK	3	89	89	Current	2.0	*	30	3	8.7	89	0.4	*	*	5.5	1	0.16	0.01	2	870	120	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																														
46	CEDAR CREEK	3	89	89	Current	3.0	0.4	100	3	7.6	79	0.5	*	*	6.0	6	0.17	0.01	2	480	80	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																														
47	ECONFINA CREEK	16	89	93	Current	1.0	1.4	13	2	6.7	69	0.3	*	1	7.3	38	0.15	0.01	2	300	42	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																												

LEGEND:
 DO-DISSOLVED OXYGEN DEMAND MG/L
 CHLA-CHLOROPHYLL UG/L
 ART-ARTIFICIAL SUBSTRATE DI
 COD-CHEMICAL OXYGEN DEMAND MG/L
 BEG-YR-BEGINNING SAMPLING YEAR
 COLOR-COLOR PCU
 END-YR-ENDING YEAR
 FECL-FECL COLIFORM MPN/100ML
 FLOW-FLOW CFS
 TSI-BIOTIC INDEX
 TURB-TURBIDITY MG/L
 WOI-WATER QUALITY INDEX

MAX #OBS-MAXIMUM NUMBER OF SAMPLES
 SD-SECCI DISC METERS
 NAT-NATURAL SUBSTRATE DIVERSITY
 NITRO-TOTAL NITROGEN MG/L
 TOTAL-TOTAL ORGANIC CARBON MG/L
 TSI-TROPIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140101 ST ANDREWS BAY

* EXCEEDS SCREENING CRITERIA
0 = WITHIN SCREENING CRITERIA
- = MISSING DATA

SCREENING VARIABLES AND CRITERIA

WATERSHED ID NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM		BIOL DIV	CHLA	SECCI DISC				
												TP>2.0	TP>.46	TP>.12	COND>1275	BOD>3.3 (COND>2102)	DO>4 (COD>3700)	TOT>3700 (DINAT>1.95)	CHLA>40 (DINAT>1.5)	BECK>5.5 (TOC>27.5)	SD>7
* WATER BODY TYPE: ESTUARY																				
1 ST. JOSEPH BAY	1	FAIR Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
2 PANTHER SWAMP	2	FAIR Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
3 WALKER BAYOU	3	FAIR Historical	x	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
4 DIRECT RUNOFF TO GULF	4	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
5 EAST BAY (E)	5	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
6 CALIFORNIA BAYOU	6	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
7 EAST BAY (W)	7	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
8 ST. ANDREWS BAY (MOUTH)	8	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
9 ST. ANDREWS BAY (MOUTH)	9	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
10 PITTS BAYOU	10	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
11 LAIRD BAYOU	11	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
12 DIRECT RUNOFF TO BAY	12	UNKNOWN Current	x	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
13 MASALINA BAYOU	13	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
14 PARKER BAYOU	14	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
15 ST. ANDREWS BAY (M)	15	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
16 WOODLAWN CANAL	16	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
17 WATSON BAYOU	17	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
18 WATSON BAYOU	18	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
19 DIRECT RUNOFF TO BAY	19	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
20 PRETTY BAYOU	20	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
21 ROBINSON BAYOU	21	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
22 MILL BAYOU	22	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
23 GOOSE BAYOU	23	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
24 ST. ANDREWS BAY (N)	24	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
25 ST. ANDREWS BAY (N)	25	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
26 ST. ANDREWS BAY (N)	26	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
27 BEAUTY BAYOU	27	FAIR Current	x	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
28 DIRECT RUNOFF TO BAY	28	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
29 NORTH BAY (N)	29	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
30 NORTH BAY (N)	30	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
31 NORTH BAY (N)	31	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
32 WEST BAY	32	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
33 WEST BAY	33	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
34 LAKE POWELL	34	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
35 DIRECT RUNOFF TO BAY	35	GOOD Historical	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
* WATER BODY TYPE: STREAM																				
5 WATAPPO	5	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
13 SANDY CREEK	13	GOOD Current	0	-	-	0	0	-	0	-	0	-	-	-	-	-	-	-		
* COND=CONDUCTIVITY DO=DISSOLVED OXYGEN ALK=ALKALINITY BECK=BECK'S BIOTIC INDEX BIOL DIV=BIOLOGICAL DIVERSITY CHLA=CHLOROPHYLL DIAT=NATURAL SUBSTRATE DIVERSITY DIAT-Artificial Substrate Diversity DN=DINAT=DINATURAL NITROGEN TP=TPHOSPHORUS TSS=TOTAL SUSPENDED SOLIDS TURB=TURBIDITY SD=SECCI DISC METERS																				
LEGEND: ALK-ALKALINITY BECK=BECK'S BIOTIC INDEX BIOL DIV=BIOLOGICAL DIVERSITY CHLA=CHLOROPHYLL DIAT=NATURAL SUBSTRATE DIVERSITY DIAT-Artificial Substrate Diversity DN=DINAT=DINATURAL NITROGEN TP=TPHOSPHORUS TSS=TOTAL SUSPENDED SOLIDS TURB=TURBIDITY SD=SECCI DISC METERS																				

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03140101 ST ANDREWS BAY

'W = EXCEEDS SCREENING CRITERIA
'=MISSING DATA

SCREENING CRITERIA

WATERSHED ID	NAME	RANK	DATA RECORD	SCREENING VARIABLES AND CRITERIA									
				TN	STREAM TP	LAKE TP	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTERIA	BIOLOGICAL DIVERSITY
20	CALLOWAY CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	-
23	LAKE MARTIN BAYOU	GOOD	Historical	0	0	0	x	0	-	0	0	0	x
28	BAYOU GEORGE CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	0
32	BEEFWOOD BRANCH	GOOD	Current	0	0	0	x	0	-	0	0	0	0
37	DIRECT RUNOFF TO BAY	GOOD	Historical	0	0	0	x	0	-	0	0	0	0
38	SO PK LITTLE BEAR CRK	GOOD	Current	0	0	0	x	0	-	0	0	0	x
40	CHOOED CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	0
42	BURNT MILL CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	0
43	BEAR BRANCH	GOOD	Current	0	0	0	x	0	-	0	0	0	0
45	LITTLE BEAR CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	x
46	CEDAR CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	0
47	ECONFINA CREEK	GOOD	Current	0	0	0	x	0	-	0	0	0	0

LEGEND:
 COND=CONDUCTIVITY
 ALK=ALKALINITY
 BECK-BECK'S BIOTIC INDEX
 BIOL DIV-BILOGICAL DIVERSITY
 CHLA-CHLOROPHYLL
 DO=DISSOLVED OXYGEN
 CURRENT=1989 TO 1993
 HISTORICAL=1970 TO 1988
 OXYGEN DEMAND=BOD, COD, TOC
 PH-PH
 TSS-TOTAL SUSPENDED SOLIDS
 TURB-TURBIDITY
 TN-NITROGEN
 DINAT-NATURAL SUBSTRATE DIVERSITY
 SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03140101 ST ANDREWS BAY

"X"=DEGRADING TREND
"0"=STABLE TREND
"+"=IMPROVING TREND
.="MISSING DATA

1984 - 1993 TRENDS
WATERSHED ID NAME

		QUALITY RANK	OVER-1Q	OVER-2Q	OVER-3Q	PAI	T	T	C	S1	P	A	D	D	T	F	<---	PLEASE READ THESE COLUMNS VERTICALLY
		WQ1	WQ2	WQ3	WQ4	WQ5	WQ6	WQ7	WQ8	WQ9	WQ10	WQ11	WQ12	WQ13	WQ14	WQ15	WQ16	WQ17
13	SANDY CREEK	GOOD	YES	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
20	CALLOWAY CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
23	LAKES MARTIN BAYOU	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
28	BAYOU GEORGE CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
32	BEEFWOOD BRANCH	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
37	DIRECT RUNOFF TO BAY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
38	SO FK LITTLE BEAR CK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
40	CROOKED CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
42	BURNT MILL CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
43	BEAR BRANCH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
45	LITTLE BEAR CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
46	CEDAR CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
47	ECONFINA CREEK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

MEETS USE ?

WQ1 TREND

WQ2 TREND

WQ3 TREND

WQ4 TREND

WQ5 TREND

WQ6 TREND

WQ7 TREND

WQ8 TREND

WQ9 TREND

WQ10 TREND

WQ11 TREND

WQ12 TREND

WQ13 TREND

WQ14 TREND

WQ15 TREND

WQ16 TREND

WQ17 TREND

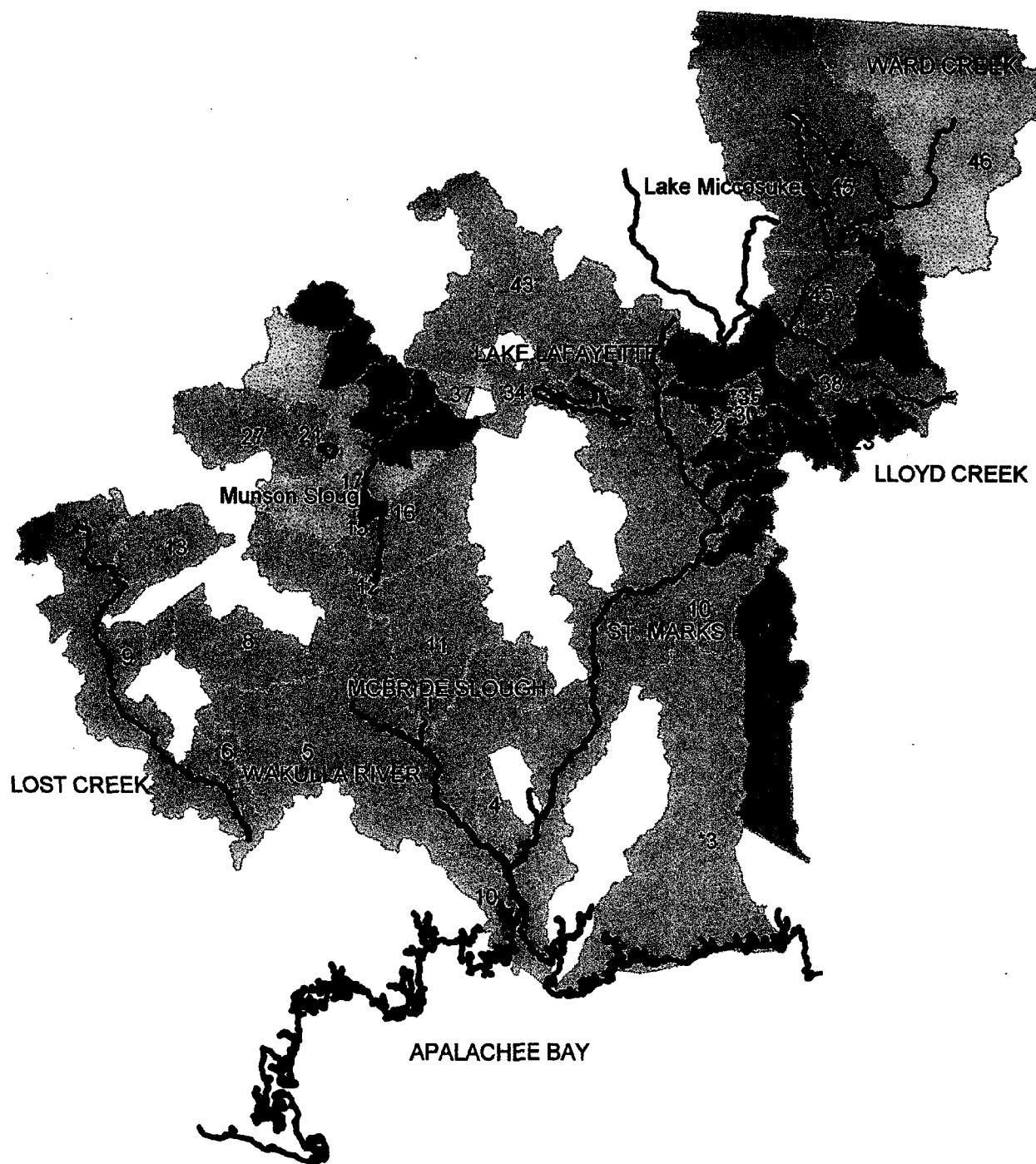
DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

LEGEND:
DO-SAT-DO SATURATION
FCOLI-FCOLIFORM
ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS

TCOLL-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS

NPS QUALITATIVE SURVEY RESULTS
 AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
 THE + ON MAPID INDICATES NO STORE INFORMATION AVAILABLE FOR THIS WATERSHED
 -SEE PAGE 11 FOR LEGEND FOR THIS TABLE

		CATNAME=ST ANDREWS BAY HUC=03140101																												
		N	B	S	P	O	S	A	H	T	I	O	F	T	P	I	E	L	G	N	N	N	N	N	N	N	N	N	O	
M		U	A	E	D	S	R	H	D	O	L	A	H	H	S	E	E	H	A	B	R	A	S	N	N	N	N	T		
A	B	T	C	D	S	I	R	T	I	E	X	I	M	B	E	R	K	L	W	I	O	D	S	F	R	I	S	O		
P	W	W	W	Q	Q	Q	N	2	2	2	2	Y	N	E	I	F	R	K	P	1	G	S	D	D	B	W	I	S	I	
I	B	I	A	S	3	3	E	R	E	E	O	C	R	G	I	T	T	L	M	P	1	1	1	1	1	1	1	1	1	
T	I	I	I	S	0	0	P	N	I	I	I	I	H	I	B	T	P	A	A	O	L	A	E	I	O	C	I	S	Y	
D	N	D	N	N	5	5	S	T	A	T	L	D	E	S	N	Y	H	L	T	W	L	L	D	T	R	L	M	H	M	
17	1120	WOODLAWN CANAL	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
39*	1040	DIRECT RUNOFF TO GULF	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

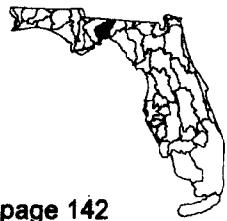


ST. MARKS RIVER BASIN
03120001

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



ST. MARKS RIVER BASIN

Basic Facts

Drainage Area: 1,180 square miles (about 95% in Florida)

Major Land Uses: forest, urban development

Population Density: low, moderate in Tallahassee area

Major Pollution Sources: WWTP, urban runoff

Best Water Quality Areas: Wakulla River, upper St. Marks

Worst Water Quality Areas: Lake Munson and Tallahassee drainage ditches

Water Quality Trends: stable water quality at one site on St. Marks

OFW Waterbodies:

St. Marks National Wildlife Refuge

St. Marks River

Wakulla River

Wakulla Springs State park

Big Bend Seagrasses State Aquatic Preserve

SWIM Waterbodies: none

Reference Reports:

Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:

Gray Bass, FGFWFC, 904/957-4172

Don Ray, DEP (Pensacola), 904/444-8300

Ecological Characterization

The St. Marks River basin drains approximately 1,180 square miles and extends from south Georgia to the Gulf of Mexico. It includes approximately one-half of the drainage from Tallahassee. The St. Marks begins as a tiny blackwater stream meandering through a series of sloughs and ponds. Lake Lafayette, on the outskirts of Tallahassee, also flows via a slough to the St. Marks when rainfall is great. Near the Leon-Wakulla County line, the river widens and clarity improves with water input from several springs, particularly Horn Spring. The river then plunges underground at Natural Bridge and emerges a short distance downstream at St. Marks Spring. Here, the stream is larger and more characteristic of a spring run, although during heavy rains it does become tannic. The

flow here averages about 700 cfs. Its sister river, the Wakulla, with a flow of about 400 cfs, emerges from Wakulla Springs about 10 miles to the west. The streams join near the City of St. Marks about 3 miles upstream from the Gulf of Mexico.

Both river corridors are heavily wooded with cypress and other native vegetation; however, there are increasing numbers of home sites encroaching on both rivers. Both rivers are used heavily for canoeing, fishing and swimming. Land use in the basin is largely for silviculture. The lower basin is teeming with wildlife in pine woods and fresh and saltwater marshes. Much of this area is protected by the St. Marks National Wildlife Refuge. Both rivers are designated as Outstanding Florida Waters.

Anthropogenic Impacts

Water quality is excellent in much of this basin. There are two areas in the basin which have water quality problems. Munson Slough drains portions of the Tallahassee urban area and historically received treated wastewater from small package plants and runoff from the city WWTP sprayfield. The stream system enters Lake Munson and then disappears into a sinkhole several miles downstream of the lake. The lake and stream system exhibit poor water quality with algal blooms, high nutrients, bacteria and transparency problems. Effluent from the major WWTP in Tallahassee has been diverted from Munson Slough to a land spreading operation. The lake still has problems relating to urban runoff from Tallahassee.

A Lake Munson study was conducted in the mid-1980s by the Department to determine the status of water and sediment quality as a first step toward a proposed restoration project. The study indicated that since the diversion of treated wastewater from Munson Slough the algal growth potential has decreased tenfold and the biological community has relatively good diversity. It was also determined that the low nutrient, highly tannic swamp waters draining into the lake have had a beneficial effect on the lake's recovery. However, with the proximity of the lake and slough to ground water, there is a fear that the nearby chain of sinkholes will become polluted.

The other problem is in the St. Marks River downstream of Rattlesnake Branch (the lower 3-4 river miles). This section of the river received effluent from Seminole Refining Corporation (which was found in 1985 to be acutely toxic to bioassay organisms) and Purdom Power Plant. The former company is under a Consent Order from DEP and is no longer operating. Seminole is in the process of remediating the site. To pay for the remediation, the property was sold to St. Marks Refining. St. Marks Refining was issued a temporary operating permit until 1996, but they are currently not refining oil at the site. In addition, there are docking and pumping stations for oil barges, and a few small marinas

for fishing and recreational boats. There have been several major and minor oil spills in the past, and sediments in the area are coated with oil. There is a small 50,000 GPD sewage treatment which discharges into the lower St. Marks River. Plant inspection in October, 1993 found no problems with toxicity, metals, W-BNA or pesticides, however algal growth potential (AGP) exceeded the EPA established threshold. Nutrient input into the St. Marks Basin is a cause for concern.

The Wakulla River is fed by one of Florida's highest discharge springs and has excellent water quality. The upper portion of the river was recently bought by the State and made into a state park; however, the lower portion of the river is threatened by continued waterfront development with insufficient buffer areas along the river's edge. Near its confluence with the St. Marks, the Wakulla receives increased nutrient loading from Boggy Branch (Olin Corp. discharge). Olin is studying the problem.

Recently, problems have been noted in the Lake Lafayette drainage of Tallahassee's east side. These problems are being investigated.

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

** USGS HYDROLOGIC UNIT: 03120001 ST MARKS RIVER

WATERSHED ID	NAME	WATERSHED DATA RECORD						WATER CLARITY						DISSOLVED OXYGEN						OXYGEN DEMAND			PH ALKALINITY			TROPHIC STATUS			COLIFORM			BIOLOGICAL DIVERSITY			WATER QUALITY INDICES		
		MAX OBS	BEG YR	END YR	PERIOD	TURB	SD COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO PHOS	CHLA	TOTAL FECI	NAT	ART	BECK	COND	FLOW	WQI	TSI	WQI-RIVER	0-44 45-59 60-90	TSI-BECKARY	0-49 50-59 60-100	TSI-LAKE	0-59 60-69 70-100						
* WATER BODY TYPE: LAKE																																					
2 LOST LAKE REC AREA	38	86	86	Historical	1.4	-	30	-	-	-	-	-	-	-	-	5.1	1	0.28	0.01	-	-	-	-	22	-	-	-	-	-	-	-	18	-	-			
13 CLEAR LAKE	5	86	86	Historical	2.5	-	23	-	-	-	-	-	-	-	-	4.5	1	0.27	0.01	-	-	-	-	29	-	-	-	-	-	-	-	27	-	-			
15 LAKE MUNSON	921	73	87	Historical	18.5	0.5	69	7	9.1	97	6.5	38	18	8.2	48	3.09	0.46	140	445	44	-	-	-	-	163	-	-	-	-	-	-	-	86	-	-		
21 LAKE Bradford	9	92	92	Current	1.6	1.0	100	1	7.2	80	-	-	11	5.8	1	0.53	0.01	5	100	4	-	-	-	-	23	-	-	-	-	-	-	-	41	-	-		
27 BRADFORD BROOK	10	85	86	Historical	2.3	-	8	-	34.0	0.5	97	13	5.2	50	2.0	28	8	6.2	16	0.61	0.26	10	400	4	-	-	-	-	-	-	15	-	-				
34 LAKE LAFAYETTE DRAIN	23	89	92	Current	25.0	-	94	8	-	5.0	36	12	14	0.67	0.17	-	-	-	-	-	-	-	56	-	-	-	-	-	-	-	51	-	-				
43 ALFORD AVE	13	89	89	Current	4.6	0.6	110	4	2.0	25	-	16	5.5	2	0.94	0.05	2	3000	60	-	-	-	-	42	-	-	-	-	-	-	-	48	-	-			
45 Lake Miccosukee	8	92	92	Current	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	53	-	-			
* WATER BODY TYPE: SPRING	9	73	74	Historical	1.5	-	60	-	-	-	0.5	14	6	7.7	74	0.32	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	192	-	-				
* WATER BODY TYPE: STREAM																																					
4 BIG BOGgy BRANCH	8	93	93	Current	1.3	0.5	30	2	5.5	63	-	-	-	5	7.6	177	1.11	0.19	-	350	-	-	-	-	-	-	-	680	-	-							
5 WARULLA RIVER	20	92	93	Current	1.0	1.8	10	1	7.2	79	-	-	-	2	7.5	126	0.66	0.01	-	200	277	-	-	-	-	-	-	-	296	-	-						
6 UNNAMED DRAIN	3	85	85	Historical	5.2	-	340	-	-	-	-	-	-	-	-	5.0	0	0.56	0.01	-	-	-	-	-	-	-	-	-	-	50	-	-					
8 BLACK CREEK	4	78	78	Historical	1.1	0.5	140	1	7.3	83	-	-	-	18	7.3	38	0.42	0.09	-	-	-	-	-	-	-	-	-	-	366	-	-						
9 LOST GREEK	7	93	93	Current	3.4	1.5	38	3	5.6	61	-	-	-	5	7.3	65	0.36	0.04	-	80	-	-	-	-	-	-	-	99	-	-							
10 ST. MARKS RIVER	20	92	93	Current	0.5	1.6	10	1	3.3	34	-	-	-	1	7.1	131	0.56	0.01	-	1271	-	-	-	-	-	-	-	145	-	-							
11 MCBRIDE SLOUGH	7	93	93	Current	3.8	0.5	60	2	5.1	58	-	-	-	9	6.9	34	0.47	0.13	-	80	-	-	-	-	-	-	-	215	-	-							
12 Munson Sink	15	92	93	Current	3.3	0.4	50	3	5.9	73	-	-	-	12	7.4	30	0.58	0.09	-	2000	40	-	-	-	-	-	-	90	-	-							
15 Munson Slough (below)	7	93	93	Current	8.0	0.7	120	5	0.9	10	-	-	-	9	6.5	32	0.61	0.12	-	102	-	-	-	-	-	-	-	92	-	-							
17 Munson Slough (above)	7	93	93	Current	8.0	0.7	120	5	0.9	10	-	-	-	9	6.5	31	0.67	0.12	-	144	-	-	-	-	-	-	-	156	-	-							
25 EAST DRAINAGE DITCH	20	87	87	Historical	47.5	-	81	32	-	-	12.0	34	20	-	-	15	0.49	0.65	-	-	-	-	-	-	-	72	-	-									
26 UNNAMED SLOUGH	14	89	89	Current	115.0	-	112	39	-	-	2.5	28	10	-	-	34	1.04	0.87	-	0	700	-	-	-	-	-	-	-	52	-	-						
31 ST. AUGUSTINE BRANCH	14	88	88	Historical	131.0	-	127	95	-	-	5.5	38	15	-	-	29	1.61	0.80	-	0	700	-	-	-	-	-	-	-	65	-	-						
33 CENTRAL DRAINAGE DITCH	13	89	89	Current	71.5	-	68	127	-	-	11.0	93	26	-	-	22	1.61	0.80	-	-	-	-	-	-	-	72	-	-									
37 MALL DRAINAGE DITCH	21	89	89	Current	61.0	-	165	34	-	-	4.0	23	9	-	-	18	0.65	0.32	-	-	-	-	-	-	-	62	-	-									
38 LLOYD CREEK	6	92	92	Current	3.1	0.5	55	1	9.0	91	-	-	-	5	6.5	13	0.69	0.12	-	302	203	-	-	-	-	-	-	50	-	-							
40 GODBY DITCH	18	87	88	Historical	84.7	-	96	44	-	-	7.5	62	24	-	-	31	0.72	0.63	-	-	400	-	-	-	-	-	-	-	83	-	-						
42 UNNAMED RUN	35	87	88	Historical	30.0	-	61	25	-	-	8.0	60	15	-	-	13	0.89	0.43	-	-	500	-	-	-	-	-	-	-	48	-	-						
46 WARD CREEK	5	92	92	Current	1.9	0.7	100	4	1.2	12	-	-	-	10	6.0	4	0.60	0.07	-	800	42	-	-	-	-	-	-	30	-	-							

LEGEND:
 DO-DISSOLVED OXYGEN DEMAND MG/L
 CHLA-CHLOROPHYLL UG/L
 ART-ARTIFICIAL SUBSTRATE DI
 COD-CHEMICAL OXYGEN DEMAND MG/L
 BEG YE-BEGINNING SAMPLING YEAR COLOR-COLOR PCU
 END YE-END SAMPLING YEAR COLOR-COLOR PCU
 BECK-BECK'S BIOTIC INDEX
 COND-CONDUCTIVITY UMHOHS
 FLOW-FLOW CFS
 PH-PH STANDARD UNITS
 TSI-TROPIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L

MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCI DISC METERS
 NAT-NATURAL SUBSTRATE DIVERSITY
 NITRO-TOTAL NITROGEN MG/L
 TOTAL-TOTAL ORGANIC CARBON MG/L
 TS1-WATER QUALITY INDEX
 TSI-TROPIC STATE INDEX
 TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03120001 ST MARKS RIVER

x=EXCEEDS SCREENING CRITERIA
0=WITHIN SCREENING CRITERIA

MISSING DATA

WATERSHED ID - NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	ALK	TURB & TSS	COND	OXYGEN DEMAND	SCREENING VARIABLES AND CRITERIA													
										POI OR TSI	CURRENT OR HISTORICAL	TP>2.0	TP>.46	TP>.12	PH>9.8	ALK<20	TURB>16.5	COND>1275	BOD>3.3	DO<4	COLIFORM BACTERIA	BIOLOGICAL DIVERSITY	CHLA	SECCHE DISC
* WATER BODY TYPE: LAKE																							
2 LOST LAKES REC AREA	GOOD	Historical	0	-	0	-	x	-	x	GOOD	Historical	-	-	-	-	-	-	-	-	-	-	-	-
13 CLEAR LAKE	GOOD	Historical	0	-	0	-	x	-	x	GOOD	Historical	-	-	-	-	-	-	-	-	-	-	-	-
15 Lake Munson	Poor	Historical	x	-	x	-	0	0	x	Poor	Historical	-	-	-	-	-	-	-	-	-	-	-	-
21 Lake Bradford	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
27 BRADFORD BROOK	Good	Historical	0	-	0	-	x	-	x	Good	Historical	-	-	-	-	-	-	-	-	-	-	-	-
34 LAKE LAFAYETTE DRAIN	Good	Current	0	-	x	-	0	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
43 ALFORD ARM	Good	Current	0	-	x	-	0	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
45 Lake Miccosukee	Good	Current	0	-	x	-	0	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
* WATER BODY TYPE: SPRING																							
1 KINI SPRING	Good	Historical	0	-	0	-	x	-	x	Good	Historical	-	-	-	-	-	-	-	-	-	-	-	-
* WATER BODY TYPE: STREAM																							
4 BIG BOGIE BRANCH	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
5 WATULLA RIVER	Good	Historical	0	-	0	-	x	-	x	Good	Historical	-	-	-	-	-	-	-	-	-	-	-	-
6 UNNAMED DRAIN	Good	Historical	0	-	0	-	x	-	x	Good	Historical	-	-	-	-	-	-	-	-	-	-	-	-
8 BLACK CREEK	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
9 LOST CREEK	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
10 ST. MARKS RIVER	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
11 MC RIDGE SLough	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
12 Munson Sink	Good	Current	0	-	0	-	x	-	x	Good	Current	-	-	-	-	-	-	-	-	-	-	-	-
16 Munson Slough (below L)	Good	Current	0	-	0	-	x	-	x	Fair	Current	-	-	-	-	-	-	-	-	-	-	-	-
17 Munson Slough (above L)	Fair	Current	0	-	0	-	x	-	x	Poor	Historical	-	-	-	-	-	-	-	-	-	-	-	-
25 EAST DRAINAGE DITCH	Poor	Historical	0	-	0	-	x	-	x	Unkn	Current	-	-	-	-	-	-	-	-	-	-	-	-
26 UNNAMED SLough	Poor	Historical	0	-	0	-	x	-	x	St. Augustine Branch	Current	-	-	-	-	-	-	-	-	-	-	-	-
31 ST. AUGUSTINE BRANCH	Poor	Current	0	-	x	-	0	-	0	Central Drainage Ditch	Current	-	-	-	-	-	-	-	-	-	-	-	-
33 CENTRAL DRAINAGE DITCH	Poor	Current	0	-	x	-	0	-	0	Hall Drainage Ditch	Current	-	-	-	-	-	-	-	-	-	-	-	-
37 HALL DRAINAGE DITCH	Fair	Current	0	-	x	-	0	-	0	Lloyd Creek	Good	-	-	-	-	-	-	-	-	-	-	-	-
38 LLOYD CREEK	Good	Current	0	-	x	-	0	-	0	Godby Ditch	Poor	Historical	-	-	-	-	-	-	-	-	-	-	-
40 GODBY DITCH	Poor	Historical	0	-	x	-	0	-	0	Unnamed Run	Poor	Historical	-	-	-	-	-	-	-	-	-	-	-
42 UNNAMED RUN	Poor	Historical	0	-	x	-	0	-	0	Ward Creek	Fair	Current	-	-	-	-	-	-	-	-	-	-	-

LEGEND:
COND=CONDUCTIVITY
DO=DISSOLVED OXYGEN
ALK=ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL-DIV-BIOTICAL DIVERSITY
CHLA-CHLOROPHYLL

FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1998
DIAGNOSTIC SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY

FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1998
DIAGNOSTIC SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY

TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
OXYGEN DEMAND-BOD, COD, TOC
TURB-TURBIDITY
TN-NITROGEN
SD-SECCHE DISC METERS

WQI OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WQI OR TSI, IS
BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT

** USGS HYDROLOGIC UNIT: 03120001 ST MARKS RIVER

FRESHWATER SOURCES-CLEANUP

*X =DEGRADING TREND

*0=STABLE TREND

*+=IMPROVING TREND

*- =MISSING DATA

WATERSHED ID		WATERSHED NAME		QUALITY RANK		OVER-1Q or S1		T1 T2 C5 P1 A1 B1 D1 F1 E1		<--- PLEASE READ THESE COLUMNS VERTICALLY	
				ALL 1		L		K1 R1 S1 D1 C1		S1 O1 M1 C1 E1	
		WQI TREND		A		B		A1 L1 P1 W1		T1 I1	
		MEETS USE ?		TSI						DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS	
*	WATER BODY TYPE: LAKE	YES	GOOD								
2	LOST LAKE REC AREA	YES	GOOD								
13	CLEAR LAKE	NO	POR								
15	Lake Munson	YES	GOOD								
21	Lake Bradford	YES	GOOD								
27	BRADFORD BROOK	YES	GOOD								
34	LAKE LAFAYETTE DRAIN	YES	GOOD								
43	ALFORD ARM	YES	GOOD								
45	Lake Maccosukee	YES	GOOD								
*	WATER BODY TYPE: SPRING	YES	GOOD								
1	KINI SPRING										
*	WATER BODY TYPE: STREAM	YES	GOOD								
4	BIG BOGGY BRANCH	YES	GOOD								
5	WAKULLA RIVER	YES	GOOD								
6	UNNAMED DRAIN	YES	GOOD								
8	BLACK CREEK	YES	GOOD								
9	LOST CREEK	YES	GOOD								
10	ST. MARKS RIVER	YES	GOOD	0	0	0	0	0	0	0	0
11	XMBRIDE SLough	YES	GOOD								
12	Munson Sink	YES	GOOD								
16	Munson Slough (below L)	YES	PARTIAL								
17	Munson Slough (above L)	NO	PARTIAL								
25	EAST DRAINAGE DITCH	NO	POR								
26	UNNAMED SLOUGH	NO	UNKNOWN								
31	ST AUGUSTINE BRANCH	NO	POOR								
33	CENTRAL DRAINAGE DITCH	NO	POOR								
37	HALL DRAINAGE DITCH	PARTIAL	FAIR								
38	LLOYD CREEK	YES	GOOD								
40	GODY DITCH	NO	POOR								
42	UNNAMED RIN	NO	POOR								
46	WARD CREEK	PARTIAL	FAIR								

1984 - 1993 TRENDS

WATERSHED ID		WATERSHED NAME		QUALITY RANK		OVER-1Q or S1		T1 T2 C5 P1 A1 B1 D1 F1 E1		<--- PLEASE READ THESE COLUMNS VERTICALLY	
				ALL 1		L		K1 R1 S1 D1 C1		S1 O1 M1 C1 E1	
		WQI TREND		A		B		A1 L1 P1 W1		T1 I1	
		MEETS USE ?		TSI						DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS	
*	WATER BODY TYPE: LAKE	YES	GOOD								
2	LOST LAKE REC AREA	YES	GOOD								
13	CLEAR LAKE	NO	POR								
15	Lake Munson	YES	GOOD								
21	Lake Bradford	YES	GOOD								
27	BRADFORD BROOK	YES	GOOD								
34	LAKE LAFAYETTE DRAIN	YES	GOOD								
43	ALFORD ARM	YES	GOOD								
45	Lake Maccosukee	YES	GOOD								
*	WATER BODY TYPE: SPRING	YES	GOOD								
1	KINI SPRING										
*	WATER BODY TYPE: STREAM	YES	GOOD								
4	BIG BOGGY BRANCH	YES	GOOD								
5	WAKULLA RIVER	YES	GOOD								
6	UNNAMED DRAIN	YES	GOOD								
8	BLACK CREEK	YES	GOOD								
9	LOST CREEK	YES	GOOD								
10	ST. MARKS RIVER	YES	GOOD	0	0	0	0	0	0	0	0
11	XMBRIDE SLough	YES	GOOD								
12	Munson Sink	YES	GOOD								
16	Munson Slough (below L)	YES	PARTIAL								
17	Munson Slough (above L)	NO	PARTIAL								
25	EAST DRAINAGE DITCH	NO	POR								
26	UNNAMED SLOUGH	NO	UNKNOWN								
31	ST AUGUSTINE BRANCH	NO	POOR								
33	CENTRAL DRAINAGE DITCH	NO	POOR								
37	HALL DRAINAGE DITCH	PARTIAL	FAIR								
38	LLOYD CREEK	YES	GOOD								
40	GODY DITCH	NO	POOR								
42	UNNAMED RIN	NO	POOR								
46	WARD CREEK	PARTIAL	FAIR								

LEGEND:

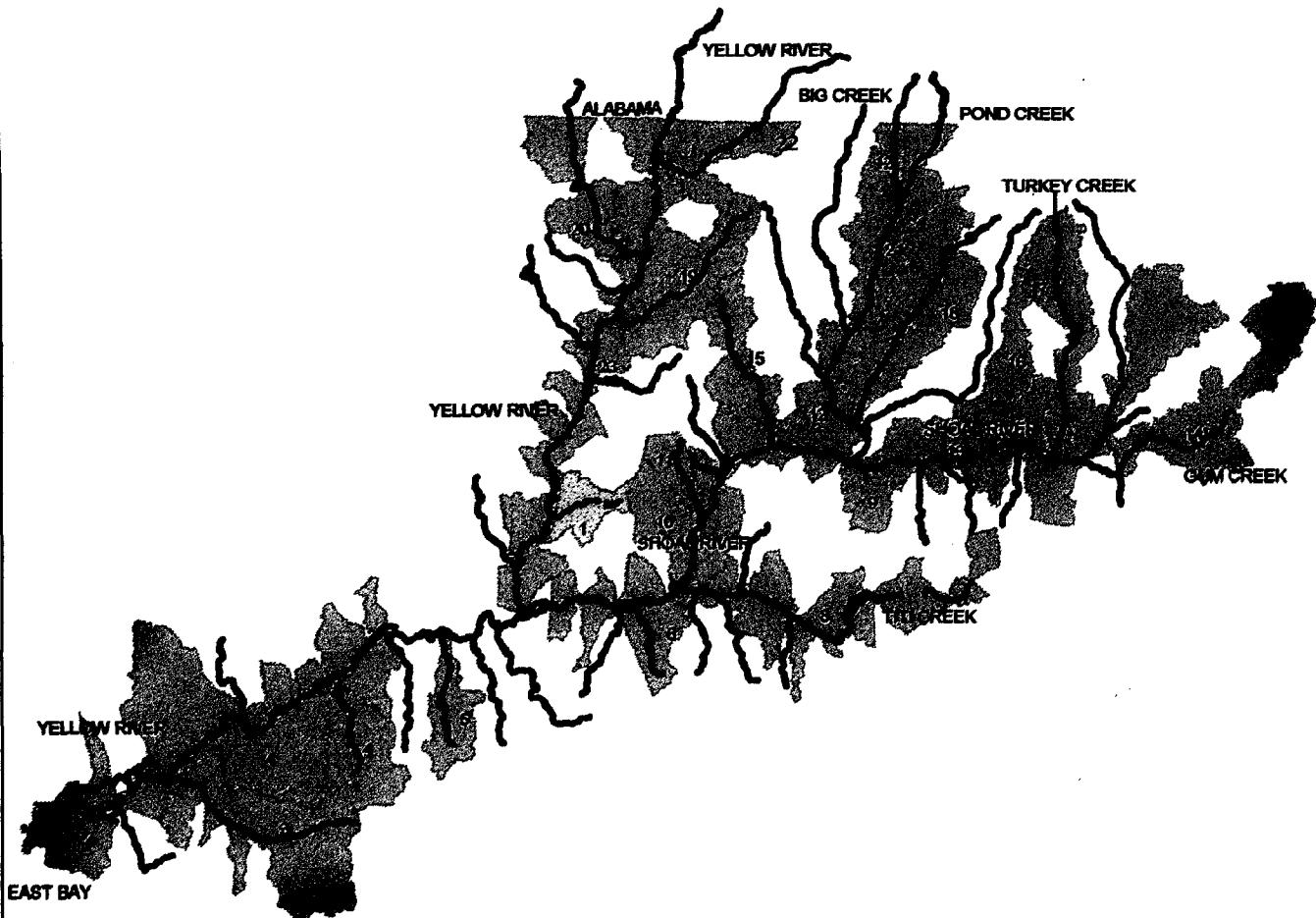
DO-SAT-DO SATURATION
FCOLI-FCAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
DO-DISOLVED OXYGEN
SD-SD-SECCHI DISC METERS

TCOL-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T. ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS

TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QUALITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAP ID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE

CATNAME=ST MARKS RIVER HUC=03120001



YELLOW RIVER BASIN
03140103

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY

GOOD
THREATENED
FAIR
POOR
UNKNOWN



page 150

YELLOW RIVER BASIN

Basic Facts

Drainage Area: 1,320 square miles (about 860 in Florida)

Major Land Uses: forest, agriculture

Population Density: low (Crestview)

Major Pollution Sources: WWTP, agriculture, runoff

Best Water Quality Areas: most of Yellow and Shoal Rivers

Worst Water Quality Areas: Trammel Creek

Water Quality Trends: stable quality at one site

OFW Waterbodies:

Shoal River

Yellow River Marsh State Aquatic Preserve

SWIM Waterbodies: part of Pensacola Bay System SWIM watershed

Reference Reports:

Florida Rivers Assessment DEP/FREAC/NPS, 1989

Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Pensacola Bay SWIM Plan, NWFWM, 1990

Basin Water Quality Experts:

Gray Bass, FGFWFC, 904/957-4172

Don Ray, DEP (Pensacola), 904/444-8340

Glenn Butts, DEP (Pensacola), 904/444-8380

In the News

- * Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for the Yellow River.
- * A sewage spill into Trammel Creek from the Crestview WWTP resulted in large fish kill during November 1990. Approximately 13,000 sport fish died.
- * Since 1988, Crestview WWTP has been cited for 2693 violations of federal rules regarding discharge of untreated or inadequately treated sewage. EPA has proposed a \$115,000 fine.

Ecological Characterization

The Yellow River Basin originates in Covington County, Alabama, and flows southward for approximately 92 miles before emptying into Blackwater Bay in Florida. The Yellow River Basin drains roughly 860 square miles of northwestern Florida. The largest tributary, the Shoal River, joins the Yellow River near Crestview, Florida, discharging an average of 1,100 cfs. The rate of flow for the Yellow River (40 miles above the mouth) averages 1,500 cfs. The Yellow River is so named because its tannic waters appear yellowish against the white sandy river bed. The Yellow River's drainage basin is the highest in Florida and contains large sandy deposits thought to be part of a barrier islands system when sea levels were higher. The river runs swiftly and creates high banks and large sand bars. The Shoal River is similar in character and drainage. After its confluence with the Shoal, the Yellow River becomes deeper and slower as it flows through the low swamp and marsh lands to the bay. Land use in the Yellow River Basin is primarily forest and agriculture. Crestview and Milligan are the largest towns in this basin. Much of the southern basin is a large Air Force base. It contains several landing fields and numerous roads.

Anthropogenic Impacts

The Yellow River has excellent water quality. The Shoal River has been declared an Outstanding Florida Water. All stream reaches in the basin which have been sampled exhibit good overall quality except for Trammel Creek. Upper reaches of the Yellow River have some impact from Alabama agricultural runoff, Florida hog lots and other agricultural activities.

Trammel Creek received treated wastewater from the City of Crestview WWTP (1.5 MGD design capacity) until April 1994. The creek exhibits nutrient and turbidity problems. The Crestview plant has had a history of treatment problems. A sewage spill in Trammel Creek in November, 1990 resulted in the death of approximately 13,000 sport fish. The City of Crestview constructed a new WWTP and now disposes all of its effluent to an upland site. The old discharge into Trammel Creek was discontinued in April, 1994. Trammel Creek joins the Yellow River approximately 3 1/2 miles west of the town of Crestview. The Yellow River was posted for non-contact by the Okaloosa County Health Department several times in the past two years after system failures at the Crestview WWTP. Runoff from the City of Crestview goes both to the Trammel Creek-Yellow River drainage and to the lower Shoal River drainage.

In addition, some areas in the basin near agricultural areas are threatened by nutrient, silt and BOD loadings from runoff. Particularly noted are Pond Creek and the Shoal River near Crestview.

Horsehead Creek, east of Laurel Hill, was severely altered due to non-vegetated eroded banks, sediment filled channel, and livestock waste disposal.

Juniper Creek below Laurel Hill was in need of habitat restoration activities because of historical clearing and moving of the stream channel resulting in the lack of fish and wildlife propagation.

Hurricane Creek in the State Forest had a low diversity and an unbalanced aquatic community below the impoundment of Hurricane Lake.

Juniper Creek draining Crestview into Shoal River continues to be under enforcement due to severe erosion from unpaved Raspberry Road and clay/sand borrow pits.

** USGS HYDROLOGIC UNIT: 03140103 YELLOW RIVER
SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD FROM 1950 TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

WATER BODY	TYPE	STREAM NAME	WATERSHED DATA RECORD												BIOLOGICAL INDICATORS															
			MAX #OBS				MAX YR				BEG END DATA				WATER CLARITY				DISSOLVED OXYGEN				PH ALK				BIODIVERSITY			
			YR	PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	NITRO PHOS	CHLA	TOTAL ART	BECK	COND	FLOW	NO2	TSI								
1	TRANCE CREEK	Current	15	89	93	4.0	0.3	40	3	7.3	74	3.3	-	7	6.4	23	2.14	0.65	2	605	80	-	-	-	121	-	4.6			
2	YELLOW RIVER	Current	2	29	90	12.6	0.7	65	5	6.8	70	0.2	-	5	6.0	11	0.47	0.03	-	418	114	-	-	-	33	-	4.0			
3	BELLING CREEK	Current	6	92	92	1.1	1.0	10	1	8.7	101	-	-	1	5.5	1	0.20	0.02	-	6	-	-	-	-	14	-	6			
4	YELLOW RIVER	Historical	69	73	85	13.5	0.9	55	12	7.3	77	0.7	16	6	6.3	12	0.47	0.04	1	510	129	2.3	3.9	4.9	4.9	-	35			
5	MALONE CREEK	Current	6	92	92	0.9	0.8	1	1	8.6	94	-	-	1	5.6	1	0.16	0.02	-	22	-	-	-	-	13	-	-			
6	PEARL CREEK	Current	8	92	93	6.5	1.2	55	4	8.0	82	-	-	5	6.1	2	0.40	0.01	-	520	-	-	-	-	21	-	31			
7	SIGNAL RIVER	Current	13	90	93	15.5	0.9	90	1	8.0	86	-	-	5	5.7	6	0.46	0.03	-	20	-	-	-	-	20	-	34			
8	WHITE CREEK	Historical	2	85	95	5.2	0.4	5	18	8.9	102	0.7	-	-	5.1	1	0.29	0.04	2	3800	490	-	-	-	3.3	-	34			
9	LADY MALL CREEK	Historical	2	85	85	9.0	0.7	40	11	8.1	97	0.3	-	-	5.8	1	0.59	0.06	2	2200	280	-	-	-	23	-	35			
10	SIGNAL RIVER	Current	8	90	92	9.0	0.7	65	10	7.8	78	0.4	-	5	6.2	3	0.58	0.03	-	750	220	-	-	-	31	-	34			
11	PINEY WOODS CREEK	Current	3	92	93	3.5	0.5	45	2	8.7	89	-	-	4	6.2	3	0.42	0.01	-	23	-	-	-	-	23	-	23			
12	POND CREEK	Historical	2	85	85	7.5	-	35	13	8.6	99	0.4	-	-	6.5	4	0.58	0.07	2	3000	170	-	-	-	36	-	35			
13	SIGNAL RIVER	Current	8	90	93	4.8	0.5	50	3	8.7	87	-	-	5	5.7	2	0.66	0.01	-	98	-	-	-	-	23	-	24			
14	GEM CREEK	Current	5	92	92	6.0	0.7	120	5	6.9	79	-	-	12	4.7	1	0.59	0.02	-	1300	200	-	-	-	23	-	38			
15	Poverty Creek	Current	7	92	92	2.9	0.3	20	3	8.8	95	-	-	1	5.8	1	0.32	0.02	-	40	-	-	-	-	21	-	34			
16	LITTLE CREEK	Current	6	92	92	3.6	0.5	80	3	6.4	72	-	-	6	5.5	2	0.67	0.02	-	3000	600	-	-	-	32	-	34			
17	THIRTY CREEK	Current	6	92	92	6.0	0.3	100	4	8.0	90	-	-	8	6.5	2	0.63	0.02	-	8000	610	-	-	-	47	-	35			
18	PINE LOG CREEK	Current	8	92	93	4.8	0.5	35	2	8.6	86	-	-	3	6.2	5	0.40	0.01	-	72	-	-	-	-	30	-	18			
19	MEDINA CREEK	Current	7	92	92	1.6	0.7	50	1	6.0	64	-	-	-	5.37	0.2	-	-	50	-	-	-	-	20	-	21				
20	BIG HORSE CREEK	Current	6	92	92	5.5	0.7	50	2	8.9	94	-	-	3	6.4	5	0.32	0.02	-	200	-	-	-	-	24	-	25			
21	POND CREEK	Current	26	91	93	7.4	0.8	60	3	6.3	72	0.8	-	-	3	6.6	1	0.70	0.05	-	1225	150	-	-	-	66	-	34		
22	BIG CREEK	Current	6	92	92	9.4	0.4	50	9	8.5	89	-	-	3	6.4	3	0.44	0.02	-	390	-	-	-	-	25	-	32			
23	YELLOW RIVER	Current	60	89	93	10.3	0.7	45	5	7.8	86	0.2	-	-	3	6.8	22	0.47	0.03	2	405	115	-	-	-	48	-	37		

ALKALINITY MG/L	BOD-BIOCHEMICAL OXYGEN DEMAND MG/L	CHLA-CHLOROPHYLL a/B MG/L	MAX. HBS-MAXIMUM NUMBER OF SAMPLES	DISC METERS	TURB-TURIDITY MG/L
AMT ARTIFICIAL SUBSTRATE DI	COD-CHEMICAL OXYGEN DEMAND MG/L	NAT-GENERAL SUBSTRATE DIVERSITY	TOC-TOTAL ORGANIC CARBON MG/L	WQI-WATER QUALITY INDEX	
BAG-YR-BEGINNING SAMPLING YEAR	COLOR-COLOR PCU	NITRO-TOTAL NITROGEN MG/L	TOTAL-TOTAL COLIFORM MPN/100ML		
BICK-BUCK'S ECOLOGIC INDEX	COND-CONDUTIVITY UMHRS	PH-PH STANDARD UNITS	TSI-TROPHIC STATE INDEX		
FLOW-FLOW CFS	FEC-FECALE CALIFORNIA MPN/100ML	PROS-TOTAL PHOSPHORUS MG/L	TSS-TOTAL SUSPENDED SOLIDS MG/L		

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

* = EXCEEDS SCREENING CRITERIA
0 = WITHIN SCREENING CRITERIA

* = MISSING DATA
0 = NOT SCREENED

SCREENING VARIABLES AND CRITERIA

WATERSHED ID - NAME	RANK	DATA RECORD	TN	STREAM TP	LAKE TP	ALK	TURB 4 TSS	COND	OXYGEN DEMAND	DO	COLIFORM		BIOL DIV	CHLA	SECCHI DISC				
											WQI OR TSI	CURRENT OR HISTORICAL	TN>2.0	TP>.46	PH>8.8	ALK<20	TURB>16.5 COND>1275	BOD>3.3 COD>102	DO<4 TOC>3.3 TOC>18	TOT>3700 FECAL>70 DIART>1.5 DIAT>1.5 TOC>27.5 TOC>5.5
* WATER BODY TYPE: STREAM																			
1 TRAMMEL CREEK	FAIR	Current	x	-	-	-	-	-	-	-	0	-	-	-	-	-	-		
2 YELLOW RIVER	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
3 BOILING CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
4 YELLOW RIVER	GOOD	Historical	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
5 MALION CREEK	GOOD	Historical	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
6 PEARL CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
7 SHOAL RIVER	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
8 TITI CREEK	GOOD	Historical	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
9 LAIRD MILL CREEK	GOOD	Historical	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
10 SHOAL RIVER	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
11 PINNEY WOODS CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
12 POND CREEK	GOOD	Historical	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
13 SHOAL RIVER	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
14 GOM CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
15 POVERTY CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
16 LITTLE CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
17 TURKEY CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
18 PINE LOG CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
19 MURDER CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
20 BIG HORSE CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
21 POND CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
22 BIG CREEK	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		
23 YELLOW RIVER	GOOD	Current	0	0	-	0	-	0	-	0	0	-	-	-	-	-	-		

LEGEND:
COND=CONDUCTIVITY
ALK=ALKALINITY
DO=DISSOLVED OXYGEN
ALK-BECK'S BIOTIC INDEX
BECK-DIV-BIOTIC DIVERSITY
CHLA-CHLOROPHYLL
CHLA-NATURAL SUBSTRATE DIVERSITY
DIART-Artificial Substrate Diversity
DIAT-Natural Substrate Diversity
DINAT-DINATRUM
TP=PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
HISTORICAL-1970 to 1988
OXYGEN DEMAND-BOD, COD, TOC
PH-PH
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TN-NITROGEN
TDN-TOTAL DISSOLVED NITROGEN
TOC-TOTAL ORGANIC CARBON
SD-SECCHI DISC METERS

ALFORD ARM	142	PANTHER SWAMP	130
APALACHICOLA BAY	16	PARKER BAY	130
APALACHICOLA RIVER	23	PATE BRANCH	65
BAYOU CHICO	104	PENSACOLA BAY	104
BAYOU GEORGE CREEK	130	PERDIDO BAY	114
BAYOU GRANDE	104	PERDIDO RIVER	123
BEATTY BAYOU	130	PINE BARREN CREEK	73
BIG COLDWATER CREEK	31	PITTS BAY	130
BIG GOLLY CREEK	23	POND CREEK	31
BLACK CREEK	23	PRETTY BAYOU	130
BLACKWATER BAY	104	RUSS MILL CREEK	47
BLACKWATER RIVER	31	SANDY CREEK	65
BRIDGE CREEK	114	SANTA ROSA SOUND	104
BRUCE CREEK	65	SHOAL RIVER	150
BRUSHY CREEK	123	SMITH CREEK	87
BUCKHORN CREEK	87	SOPCHOPPY RIVER	87
CAMEL LAKE REC AREA	23	ST. AUGUSTINE BRANCH	142
CANOE CREEK	73	ST. ANDREWS BAY	130
CARPENTER CREEK	104	ST. GEORGE SOUND	16
CHATTAHOOCHEE RIVER	40	ST. MARKS RIVER	142
CHIPOLA RIVER	47	TANYARD BRANCH	87
CHOCTAWHATCHEE RIVER	65	TELOGIA CREEK	87
CHOCTOWATCHEE BAY	55	TENMILE CREEK	65
CINCO BAYOU	55	TEXAR BAYOU	104
CLEAR CREEK	31	THOMPSON BAYOU	73
COMPASS LAKE OUTLET	130	TOMS CREEK	55
COWARTS CREEK	47	TRAMMEL CREEK	150
CROOKED CREEK	47	TURNER CREEK	114
CROOKED RIVER	81	VAUSE BRANCH	87
CYPRESS CREEK	23	WAKULLA RIVER	142
DEERPOINT LAKE	130	WATSON BAYOU	130
EAST BAY	130	WEST BAY	130
EAST FORK	31	WEST FORK	31
EAST PITTMAN CREEK	65	WOODLAWN CANAL	130
EAST RIVER BAY	104	WRIGHTS CREEK	65
ECONFINA CREEK	130	YELLOW RIVER	150
EIGHTEENMILE CREEK	100		
EIGHTMILE CREEK	114		
ELEVENMILE CREEK	114		
ESCAMBIA BAY	104		
ESCAMBIA RIVER	73		
GARNIER CREEK	55		
GODY DITCH	142		
HOLMAN BRANCH	87		
HOLMES CREEK	65		
HUBBERT BRANCH	87		
JACKSON CREEK	104		
JONES CREEK	104		
LAGRANGE BAYOU	55		
LAKE IAMONIA OUTLET	87		
LAKE JACKSON	87		
LAKE LAFAYETTE DRAIN	142		
LAKE MARTIN BAYOU	130		
LAKE MUNSON	142		
LAKE OVERSTREET DRAIN	87		
LIGHTWOOD KNOT CREEK	55		
LITTLE RIVER	87		
LITTLE SWEETWATER CR	23		
LOST LAKE REC AREA	142		
MARCUS CREEK	114		
MASSALINA BAYOU	130		
MEGGINNIS ARM RUN	87		
MERIAL LAKE	130		
MERRITTS MILL POND	47		
MILL CREEK	87		
MOSQUITO CREEK	23		
MUNSON SINK	142		
NEW RIVER	81		
NORTH BAY (N)	130		
OCHEESEE POND OUTLET	23		
OCHLOCKONEE RIVER	87		
OCKLAWAHAA CREEK	87		
OTTER CREEK	87		
PACE MILL CREEK	104		

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